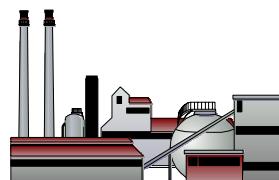
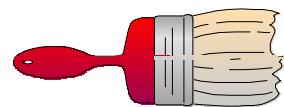
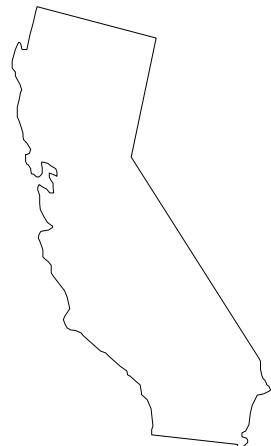


# 1998 Architectural Coatings Survey Results

## Final Report

September 1999



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California Environmental Protection Agency



Air Resources Board

# **1998 Architectural Coatings Survey**

## **Final Report**

**September 1999**

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*California Environmental Protection Agency*



**Air Resources Board**

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## **ACKNOWLEDGEMENTS**

The Air Resources Board would like to thank the people and companies that contributed to this report.

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See Chapter 1 – Companies

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This report has been reviewed and approved by the Air Resources Board and approved for publication. Approval does not signify that the contents reflect the views and policies of the Air Resources Board, nor does mention of companies constitute endorsement. This report is a direct reflection of the data submitted by those companies who responded to the Air Resources Board Architectural Coatings Survey conducted in 1998 requesting 1996 California sales data.

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## ACRONYMS USED

|                              |   |
|------------------------------|---|
| <b>ARB</b>                   | Air Resources Board   |
| <b>CARB</b>                  | California Air Resources Board  |
| <b>Density</b>               | Density of Coating  |
| <b>Dual</b>                  | Interior and Exterior Coating   |
| <b>Exterior</b>              | Exterior Coating  |
| <b>Interior</b>              | Interior Coating  |
| <b>g/l</b>                   | grams per liter   |
| <b>PD</b>                    | Protected Data – Less than three companies represent the data value   |
| <b>SB</b>                    | Solvent-Borne   |
| <b>SCM</b>                   | Suggested Control Measure   |
| <b>SWA</b>                   | Sales Weighted Average  |
| <b>Solids</b>                | Nonvolatile matter in a coating composition (i.e., the ingredients of a coating composition which, after drying, are left behind and constitute the dry film)   |
| <b>TPD</b>                   | Tons Per Day (emissions related)  |
| <b>TPY</b>                   | Tons Per Year (emissions related)   |
| <b>VOC</b>                   | Volatile Organic Compound   |
| <br><b>VOC<sub>Act</sub></b> | <br>VOC <sub>Actual</sub> - Also known as VOC of Material. A ratio of the weight of VOCs per a given volume of paint (e.g., gallon or liter) with water and exempt compounds subtracted from only the numerator (weight). VOC Actual is the value used to calculate emissions.                      |
|                              | $VOC_{Actual} = \frac{(Total\ Weight\ of\ Volatiles - Weight\ of\ Water - Weight\ of\ Exempt\ VOCs)}{Total\ Volume\ of\ Coating}$   |
| <br><b>VOC<sub>Reg</sub></b> | <br>VOC <sub>Regulatory</sub> - The VOC content limit or standard codified in architectural coating regulations. A ratio of the weight of VOCs per a given volume of paint (e.g., gallon or liter) with water and exempt VOCs subtracted from both the numerator (weight) and denominator (volume). |
|                              | $VOC_{Regulatory} = \frac{(Total\ Weight\ of\ Volatiles - Weight\ of\ Water - Weight\ of\ Exempt\ VOCs)}{(Total\ Volume\ of\ Coating - Volume\ of\ Water - Volume\ of\ Exempt\ VOCs)}$  |
| <br><b>WB</b>                | <br>Water-Borne   |

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## Introduction and Background

This report presents results from the “1998 Architectural and Industrial Maintenance Coatings Survey” conducted by the California Air Resources Board (CARB or ARB) for coatings sold in California during 1996. This is the sixth survey of this type conducted by the ARB for the purpose of estimating emissions from “Architectural and Industrial Maintenance Coatings” or “Architectural Coatings.” Architectural coatings do not include aerosol coating products. For purposes of this survey, architectural coatings were defined as follows:

“Architectural Coatings are coatings applied to stationary structures and their appurtenances, to mobile homes, to pavements, or to curbs. Appurtenances are any accessory to a stationary structure, whether installed or detached at the proximate site of installation, including but not limited to: bathroom and kitchen fixtures; cabinets; concrete forms; doors; elevators; fences; hand railings; heating equipment, air conditioning equipment, and other fixed mechanical equipment or stationary tools; lamp posts; partitions; pipes and piping systems; rain gutters and downspouts; stairways, fixed ladders, catwalks, and fire escapes; and window screens.”

The ARB’s historical pattern for conducting surveys of architectural coatings is every four or five years. Previous surveys were conducted in 1976, 1981, 1985, 1989, and 1993. The information collected in the surveys is used to help the ARB and local air pollution control or air quality management districts (APCDs or AQMDs) track the volatile organic compound (VOC) emissions from architectural coatings. The surveys are also used in the development of regulations or rules to reduce the VOC emissions from architectural coatings. The efforts to regulate coatings began in the 1970s with the task force known as the Organic Solvent Regulation Study Group or “ORGSOL”. This group consisted of the ARB, South Coast AQMD, Bay Area AQMD, and San Diego APCD.

The local districts have the primary responsibility for control of air pollution from stationary sources, such as the application of coatings. The local districts develop, adopt, and enforce rules and regulations under their jurisdiction to achieve and maintain the state and federal ambient air quality standards. The local districts have regulated architectural coatings in California since the 1970s.

The ARB’s role over the years has been to provide technical assistance to the districts in the form of industry surveys and research. To track the emission contributions of architectural coatings, an inventory was created, which is based on the surveys. Regulatory and policy guidance has been provided by the development of a suggested control measure (SCM), which was first developed in 1977, and which has been amended in 1985 and 1989. Efforts are currently underway to again amend the ARB’s architectural coatings SCM.

## The 1998 Architectural Coatings Survey

In February 1998, the ARB mailed survey questionnaires to over 700 companies that potentially sold architectural coating products in California in 1996. The ARB received 340 responses, 152 of which submitted California sales data. This compares favorably to the previous three ARB surveys (conducted in 1993, 1989, and 1985), which had an average of 149 companies responding with data. Information about the companies reporting is presented in Chapter 1.

The 1998 Architectural Coatings survey requested 1996 California sales information for 58 coating categories. The rationale for collecting 1996 sales information was tied to the time when the survey was released. During the survey development in late 1997, some coating manufacturers expressed reservations in their ability to report 1997 California sales data if the survey was to be released in early 1998. In response, the ARB requested 1996 California sales data. For each of the coating categories, the survey collected sales in gallons (broken down by sales in container sizes of 1 quart and larger than 1 quart), type of application (interior/exterior/dual), and coating composition (carrier technology, percent by volume solids, density, VOC content, recommended thinning, diluent, and ingredients). A copy of the survey questionnaire is available in Appendix A.

Some manufacturers considered the data provided in the 1998 Architectural Coatings Survey to be trade secret and confidential. To address this concern, but still allow the publishing of survey results, the ARB implemented the historical practice of concealing all data values that did not represent at least three companies, otherwise known as the "Three Company Rule." Every effort was made to reveal as much of the survey data as possible without compromising the "Three Company Rule." Unfortunately instances did arise which required certain portions of the survey results to be concealed. Throughout this report the term "Protected Data" is encountered. The purpose of this term is to reflect that compliance with the "Three Company Rule" could not be satisfied and the data was concealed from view.

The 1998 survey responses represent about 87.5 million gallons of the architectural coatings sold in California in 1996, with emissions of approximately 36,300 tons of VOC per year or about 100 tons per day. The contribution that the largest coating categories made to total sales volume and emissions are represented in the table below. The top ten coating categories account for 88 percent of the total coating sales in California, or 77 million gallons. The top ten emission categories account for 76 percent of the total emissions, or 27,600 tons per year. More detailed information on sales and emissions data are presented in Chapters 2 and 3, respectively.

## Top 10 Coating Categories Sales Volume & Emissions

| Category                                   | Sales <sup>1</sup> | Category                                | Emissions <sup>2</sup> |
|--|--------------------|---|------------------------|
| 1 Flat                                     | 36%                | Flat                                    | 15%                    |
| 2 Nonflat – medium gloss                   | 18%                | Industrial Maintenance                  | 14%                    |
| 3 Primer, Sealer, Undercoater              | 7%                 | Nonflat – medium gloss                  | 12%                    |
| 4 Bituminous                               | 6%                 | Primer, Sealer, Undercoater             | 8%                     |
| 5 Nonflat – low gloss                      | 5%                 | Quick Dry – Primer, Sealer, Undercoater | 6%                     |
| 6 Industrial Maintenance                   | 5%                 | Stain – semitransparent                 | 5%                     |
| 7 Roof                                     | 3%                 | Quick Dry – enamel                      | 4%                     |
| 8 Traffic                                  | 3%                 | Nonflat – high gloss                    | 4%                     |
| 9 Nonflat – high gloss                     | 2%                 | Traffic                                 | 4%                     |
| 10 Quick Dry – Primer, Sealer, Undercoater | 2%                 | Lacquer – clear                         | 3%                     |
| Total                                      | 88%                | Total                                   | 76%                    |

<sup>1</sup> Total Sales Volume = 87.5 million gallons

<sup>2</sup> Total Emissions = 36,300 tons per year

VOC content information was also collected for all 58 coating categories. Values for VOC content summarized in this report were determined by calculating the sales weighted average and are available in Chapter 4. VOC content values appear as VOC<sub>Actual</sub> and VOC<sub>Regulatory</sub>. VOC<sub>Actual</sub>, also known as VOC of Material, is a ratio of the weight of VOCs (minus the weight of water and exempt VOCs) per a given volume of paint. VOC<sub>Actual</sub> is the value used to determine emissions. The VOC content limit or standard codified in architectural coating regulations is commonly known as VOC<sub>Regulatory</sub>. VOC<sub>Regulatory</sub> is a ratio of the weight of VOCs per a given volume of paint with water and exempt VOCs subtracted from both the numerator (weight) and denominator (volume). The original rationale behind the VOC<sub>Regulatory</sub> value was to reflect the relationship of coverage to total solids content and to provide an equivalent basis for comparing the polluting portion of solvent-borne and water-borne coatings. Also, based on industry comments, it was believed that the VOC<sub>Regulatory</sub> approach would prohibit coating manufacturers from simply diluting a coating with water in order to meet standards specified in coating regulations.

Organizing the large amount of sales volume and VOC content (VOC<sub>Regulatory</sub>) data for 58 categories and depicting the information in a meaningful way was a challenge. To address this challenge, two approaches were taken and are presented in Chapters 5 and 6. Chapter 5 uses two types of graphs (Histograms and Cumulative Percent Graphs) to present sales volume and VOC<sub>Regulatory</sub> data by category. The histogram graphs are merely distributions of VOC<sub>Regulatory</sub> in increments of 50 grams per liter with accompanying sales volume. In addition, the histograms provide general category information such as total sales, emissions, and overall sales weighted average for VOC<sub>Regulatory</sub>. The cumulative percent graphs provide a descriptive view of each category by displaying 100 gram per liter increments of VOC<sub>Regulatory</sub> and the percent of

market volume complying. An added benefit of the cumulative percent graphs is that they display data that would otherwise be considered "Protected Data." Chapter 6 includes Table 6-1 which represents a comprehensive summary of the product data collected from the 1998 Architectural Coatings Survey (see Form II, Appendix A). Table 6-1 allows one to view coating category information on a side by side basis.

A new element to ARB's 1998 Architectural Coatings Survey was the collection of ingredient data in the survey questionnaire. The survey data compiled represents over 3000 distinct ingredients. Given the magnitude of displaying the ingredient data in a meaningful way, like compounds were aggregated under common names and divided into three main ingredient or speciation profiles (Overall, Solvent-borne, Water-borne). Chapter 7 contains more information regarding the ingredient data.

This report concludes with Chapter 8, which compares, where possible, the results from the ARB's 1993 Architectural Coatings Survey (1990 sales data) with the results of this survey. The table below presents a comparison of some overall data collected in the 1993 and 1998 architectural coating surveys.

### **Comparison of ARB's 1998 and 1993 Overall Architectural Coatings Survey Data**

|   | 1993 Survey<br>(1990 Sales) |     | 1998 Survey<br>(1996 Sales) |     | Percent<br>Change |       |
|---|-----------------------------|-----|-----------------------------|-----|-------------------|-------|
| Total volume reported (gallons)                           | 77.1 million                |     | 87.5 million <sup>3</sup>   |     | +13.5%            |       |
| Water-borne/solvent-borne split by volume                 | 76%                         | 24% | 82%                         | 18% | +22.4             | -14.9 |
| Total estimated annual average emissions <sup>1</sup>     | 126 TPD <sup>2</sup>        |     | 117 TPD                     |     | -7.2%             |       |
| Water-borne/solvent-borne split by emissions <sup>1</sup> | 28%                         | 72% | 33%                         | 67% | +9.4              | -13.6 |
| Volume per capita (gallons per capita)                    | 2.6                         |     | 2.7                         |     | +3.9%             |       |
| Emissions per capita <sup>1</sup> (pounds per capita)     | 3.1                         |     | 2.6                         |     | -16.1%            |       |

<sup>1</sup> These emission estimates include emissions from thinning and clean-up.

<sup>2</sup> This is a 1990 value. For comparison purposes, ARB's emissions inventory estimates emissions of 128 TPD in 1996.

<sup>3</sup> The top 10 survey respondents account for 75% or 65.6 million gallons. The remaining survey respondents (142) account for 25% or 21.9 million gallons.

## **Chapter 1 – COMPANIES**

The 1998 survey was sent to over 700 companies that potentially sold architectural coatings in California in 1996. We received responses from 340 companies, 152 of which submitted survey data. This compares favorably to the previous three ARB surveys (conducted in 1993, 1989, and 1985), which had an average of 149 companies responding with data.

This section includes the following table and figures:

- Table 1-1 lists the 152 survey respondents or companies alphabetically
- Figure 1-1 shows the top 10 manufacturers and market share
- Figure 1-2 shows the survey respondents' marketing classification (International, National, California statewide, or California regional)
- Figure 1-3 shows the survey respondents' gross earnings
- Figure 1-4 shows the number of employees for the survey respondents

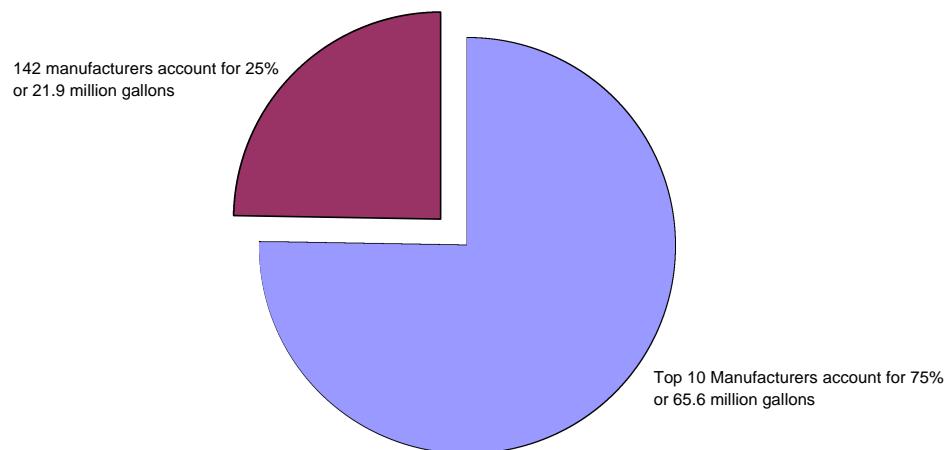
**Table 1-1**  
**Survey Respondents**

| Count | Company Name (Alpha Order)               |
|-------|--|
| 1     | 3M                                       |
| 2     | A. W. CHESTERTON COMPANY                 |
| 3     | AC PRODUCTS, INC                         |
| 4     | ACE HARDWARE                             |
| 5     | ACRYMAX TECHNOLOGIES, INC.               |
| 6     | AKZO NOBEL                               |
| 7     | ALCO NVC, INC                            |
| 8     | AMERON INTERNATIONAL PROTECT CTGS GROUP  |
| 9     | AMTECO INC                               |
| 10    | ARMSTRONG-CLARK CO., THE                 |
| 11    | BEHR PROCESS CORPORATION                 |
| 12    | BENJAMIN MOORE & CO.                     |
| 13    | BONAKEMI USA, INC                        |
| 14    | CAL WESTERN PAINTS, INC                  |
| 15    | CARBOLINE CO.                            |
| 16    | CARDINAL INDUSTRIAL FINISHES             |
| 17    | CHEMREX INC                              |
| 18    | CHILDERS PRODUCTS COMPANY, INC           |
| 19    | CHUGOKU MARINE PAINT(USA MFG. DIV.)      |
| 20    | CLOVERDALE PAINT CORPORATION             |
| 21    | CONCO PAINT COMPANY                      |
| 22    | CORONADO LABORATORIES, INC               |
| 23    | CORONADO PAINT COMPANY                   |
| 24    | DALY'S INC.                              |
| 25    | DAMPNEY COMPANY, INC.                    |
| 26    | DAP, INC.                                |
| 27    | DAVLIN COATINGS, INC                     |
| 28    | DEFT, INC.                               |
| 29    | DEL PAINT MFG CORP                       |
| 30    | DEVOE COATINGS                           |
| 31    | DEXTER CORPORATION                       |
| 32    | DOLPHIN COMPANY, THE                     |
| 33    | DOW CORNING CORPORATION                  |
| 34    | DUCKBACK PRODUCTS, INC.                  |
| 35    | DUDICK, INC.                             |
| 36    | DUNN-EDWARDS CORPORATION                 |
| 37    | E.I. DUPONT DE NEMOURS & CO., INC.       |
| 38    | EGYPTION LACQUER MFG. CO., INC.          |
| 39    | ELLIS PAINT COMPANY                      |
| 40    | ENNIS PAINT                              |
| 41    | ENVIRONMENTAL COATING SYS. INC.          |
| 42    | EPMAR CORPORATION                        |
| 43    | EUCLID CHEMICAL COMPANY, THE             |
| 44    | EVR-GARD COATINGS CO.                    |
| 45    | FARWEST PAINT MANUFACTURING COMPANY      |
| 46    | FEL-PRO CHEMICAL PRODUCTS                |
| 47    | FIELDS CORPORATION                       |
| 48    | FINE LINE PAINT COMPANY                  |
| 49    | FINE PAINTS OF EUROPE                    |
| 50    | FLECTO COMPANY, INC.                     |
| 51    | FLO-KEM, INC.                            |
| 52    | FLOOD COMPANY                            |
| 53    | FLYNT PAINT PRODUCTS                     |
| 54    | FORREST PAINT CO.                        |
| 55    | FOSROC INC.                              |
| 56    | FRAZEE INDUSTRIES                        |
| 57    | FUTURA COATINGS, INC                     |
| 58    | GACO WESTERN, INC.                       |
| 59    | GARLAND COMPANY, INC.                    |
| 60    | GEMINI COATINGS, INC.                    |
| 61    | GIBSON HOMANS                            |
| 62    | GOLDEN ARTIST COLORS                     |
| 63    | HARCO CHEMICAL COATINGS, INC.            |
| 64    | HARRIS SPECIALTY CHEMICALS, INC          |
| 65    | HEMPEL COATINGS (USA), INC.              |
| 66    | HENRY COMPANY                            |
| 67    | HERESITE PROTECTIVE COATINGS, INC        |
| 68    | HILL BROTHERS CHEMICAL COMPANY           |
| 69    | ICI PAINTS, N.A.                         |
| 70    | INDURON COATINGS, INC.                   |
| 71    | INGELS, INC.                             |
| 72    | INSL-X PRODUCTS CORPORATION              |
| 73    | INTERNATIONAL PAINT INC.                 |
| 74    | ITW PHILADELPHIA RESINS                  |
| 75    | JAMES B DAY & COMPANY                    |
| 76    | JONES BLAIR CO                           |
| 78    | KELLEY TECHNICAL COATINGS                |
| 79    | KELLY-MOORE PAINT COMPANY, INC.          |
| 80    | KLINGER PAINT CO                         |
| 81    | KOOL SEAL, INC.                          |
| 82    | LENMAR, INC.                             |
| 83    | LIFE PAINT COMPANY                       |
| 84    | LILY INDUSTRIES, INC.                    |
| 85    | LORD CORPORATION                         |
| 86    | MAMECO INTERNATIONAL INC.                |
| 87    | MASON PAINT                              |
| 88    | MASTER BUILDERS, INC.                    |
| 89    | MASTERCHEM INDUSTRIES INC.               |
| 90    | MORTON INTERNATIONAL, INC.               |
| 91    | MULICOLOR SPECIALTIES, INC.              |
| 92    | MULTI-CLEAN                              |
| 93    | NORTON & SON OF CALIFORNIA               |
| 94    | OKON, INC.                               |
| 95    | PACIFIC POLYMERS, INC.                   |
| 96    | PERVO PAINT COMPANY                      |
| 97    | PLASITE PROTECTIVE COATINGS, INC.        |
| 98    | POLY-LUX, INC.                           |
| 99    | PPG ARCHITECTURAL FINISHES, INCORPORATED |
| 100   | PRESERVA-PRODUCTS INC                    |
| 101   | PRESERVO PAINT AND COATINGS MFG. CO.     |
| 102   | PRIDE PAINT CO                           |
| 103   | PRODUCTS/ TECHNIQUES, INC.               |
| 104   | R.J. MCGLENNON CO, INC.                  |
| 105   | REILLY INDUSTRIES                        |
| 106   | REPUBLIC POWDERED METALS, INC.           |
| 107   | ROCKWOOD INDUSTRIES, DBA DAVIS COLORS    |
| 108   | RODDA PAINT COMPANY                      |
| 109   | ROSCO LABORATORIES, INC.                 |
| 110   | RUST-OLEUM CORPORATION                   |
| 111   | SAN LUIS PAINTS                          |
| 112   | SEM PRODUCTS INC                         |
| 113   | SENTRY PAINT TECHNOLOGIES INC            |
| 114   | SENTRY POLYMERS, INC.                    |
| 115   | SHERWIN-WILLIAMS CO.                     |
| 116   | SIGMA COATINGS USA B.V.                  |
| 117   | SIKA CORPORATION                         |
| 118   | SIMPSON COATINS GROUP INC.               |
| 119   | SMILAND PAINT COMPANY                    |
| 120   | SOUTHWESTERN PETROLEUM CORPORATION       |
| 121   | SPECIALTY COATINGS & CHEMICALS INC       |
| 122   | SPECTRA-TONE PAINT CORP                  |
| 123   | SPRAYLAT CORP                            |
| 124   | STAR BRONZE CO.INC.                      |
| 125   | STONHARD INC                             |
| 126   | SUNNYSIDE CORPORATION                    |
| 127   | SURFACE PROTECTION INDUSTRIES, INC.      |

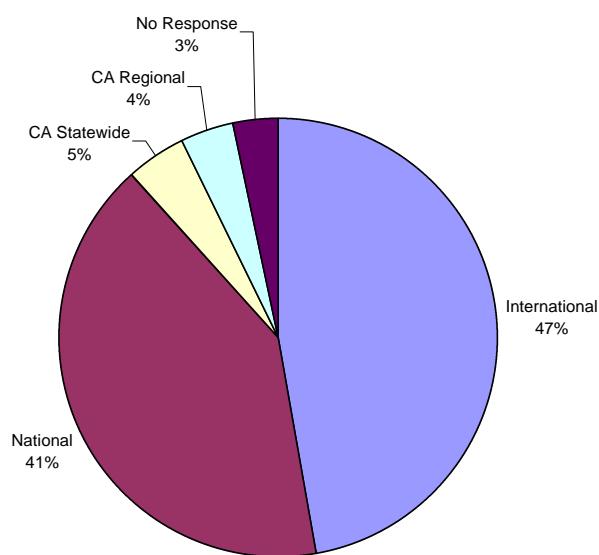
**Table 1-1 Continued**  
**Survey Respondents**

| Count | Company Name (Alpha Order)               |
|-------|--|
| 128   | SYMPLASTICS INC                          |
| 129   | TECHSTAR INDUSTRIES, INC                 |
| 130   | TENNANT COMPANY                          |
| 131   | TEXAS REFINERY CORP.                     |
| 132   | TEXTURED COATINGS OF AMERICA             |
| 133   | TNEMEC CO., INC.                         |
| 134   | TREMCO INCORPORATED                      |
| 135   | TRESCO PAINT MFG. CO.                    |
| 136   | TRINITY COATINGS COMPANY                 |
| 137   | TRU SERV MANUFACTURING CO.               |
| 138   | U.S. CELLULOSE CO., INC.                 |
| 139   | UNITED COATINGS                          |
| 140   | UNITED GILSONITE LABORATORIES            |
| 141   | VALSPAR CORPORATION                      |
| 142   | VISTA PAINT CORPORATION                  |
| 143   | W.R. GRACE & CO. CONN., GRACE CONST. PRD |
| 144   | W.R.MEADOWS OF SOUTHERN CALIFORNIA       |
| 145   | WATERLOX COATINGS CORPORATION            |
| 146   | WESTERN COLLOID PRODUCTS                 |
| 147   | WILLIAM ZINSER & CO., INC.               |
| 148   | WOOD KOTE PRODUCT                        |
| 149   | XIM PRODUCTS INC                         |
| 150   | YENKIN-MAJESTIC PAINT CORPORATION        |
| 151   | ZEHRUNG BRANDS DIVISION                  |
| 152   | ZYNOLYTE PRODUCTS CO INC                 |

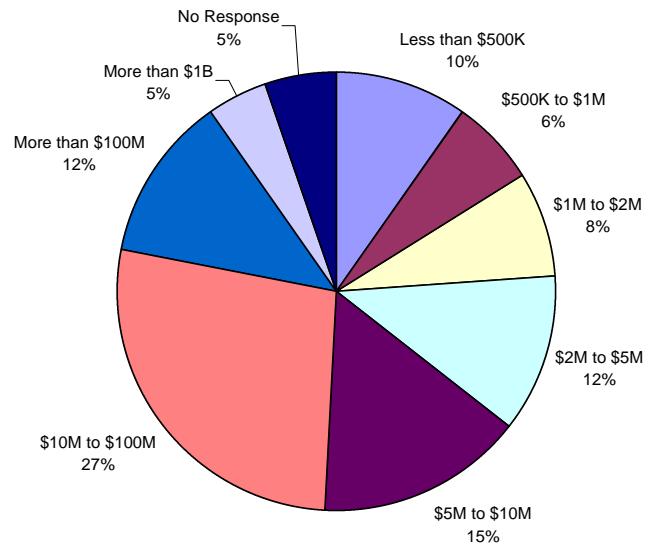
**Figure 1-1**  
**Top 10 Manufacturers and Market Share out of 152 Respondents**  
**(Total Sales Volume = 87.5 million gallons)**



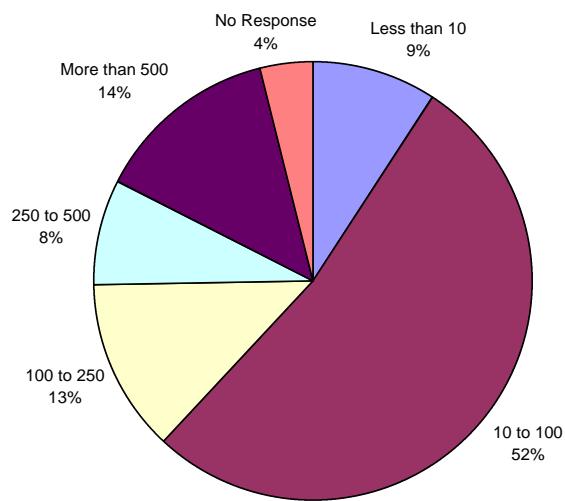
**Figure 1-2**  
**Survey Respondents Marketing Classification**



**Figure 1-3**  
**Survey Respondents Gross Earnings**



**Figure 1-4**  
**Survey Respondents Number of Employees**



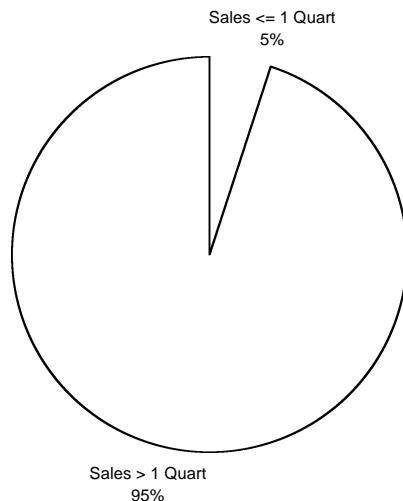
## Chapter 2 – SALES

The 1998 survey responses represent about 87.5 million gallons of architectural coatings sold in California in 1996. We believe that this represents about 97 percent of estimated total sales of architectural coatings in California. We arrived at this figure by taking 12 percent of the 1996 national architectural coatings sales figures reported by the United States Census Bureau, since California's population in 1996 was 12 percent of the nation's population.

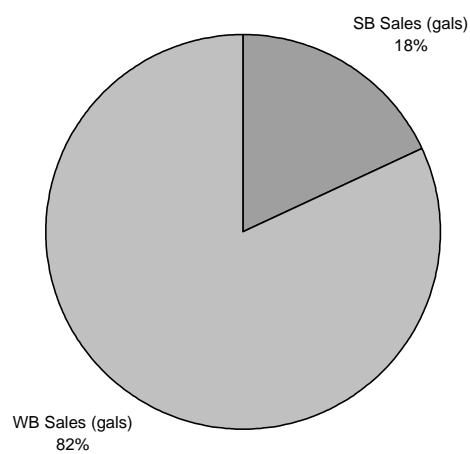
This section includes the following figures:

- Figure 2-1 shows the proportion of the 87.5 million gallons that were sold in one quart or smaller containers (5%), and those sold in containers larger than one quart (95%).
- Figure 2-2 shows the breakout of water-borne (82%) and solvent-borne (18%) coatings, as a percentage of the total volume of architectural coatings sold.
- Figure 2-3 shows the top ten categories of architectural coatings, as surveyed, by volume. The top ten categories account for about 88 percent of the total volume sold, or approximately 77 million gallons.
- Figure 2-4 shows the total sales by category for all the categories surveyed.
- Figure 2-5 that shows the solvent-borne and water-borne breakouts by category.
- Figure 2-6 shows the quart and greater than a quart breakouts.
- Figure 2-7 shows the sales volume by category arranged in descending order.

**Figure 2-1**  
**Total Sales Volume**  
**87.5 million gallons**  
**(quart breakout)**

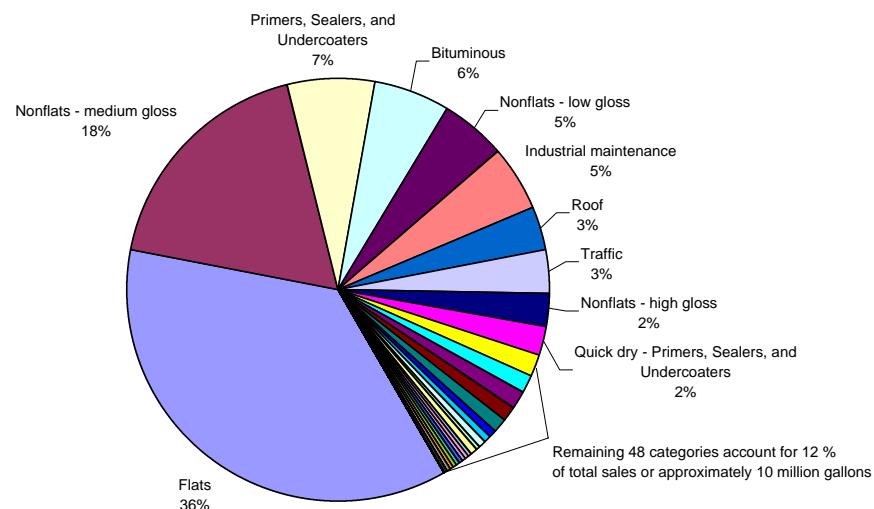


**Figure 2-2**  
**Total Sales Volume**  
**87.5 million gallons**  
**(Water-Borne & Solvent-Borne breakout)**

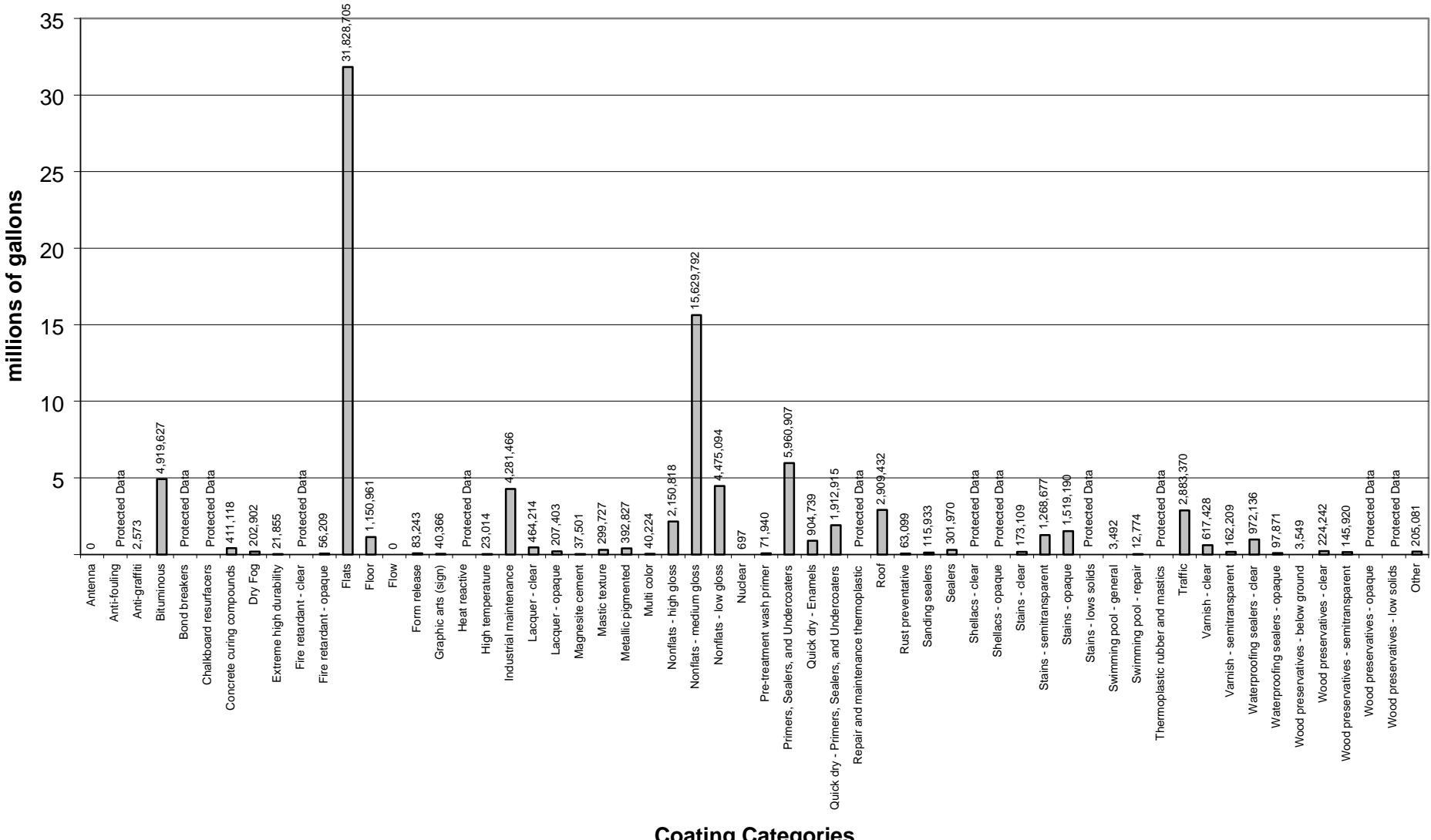


**Figure 2-3**  
**Top 10 Categories**  
**(Total Sales Volume = 87.5 million gallons)**

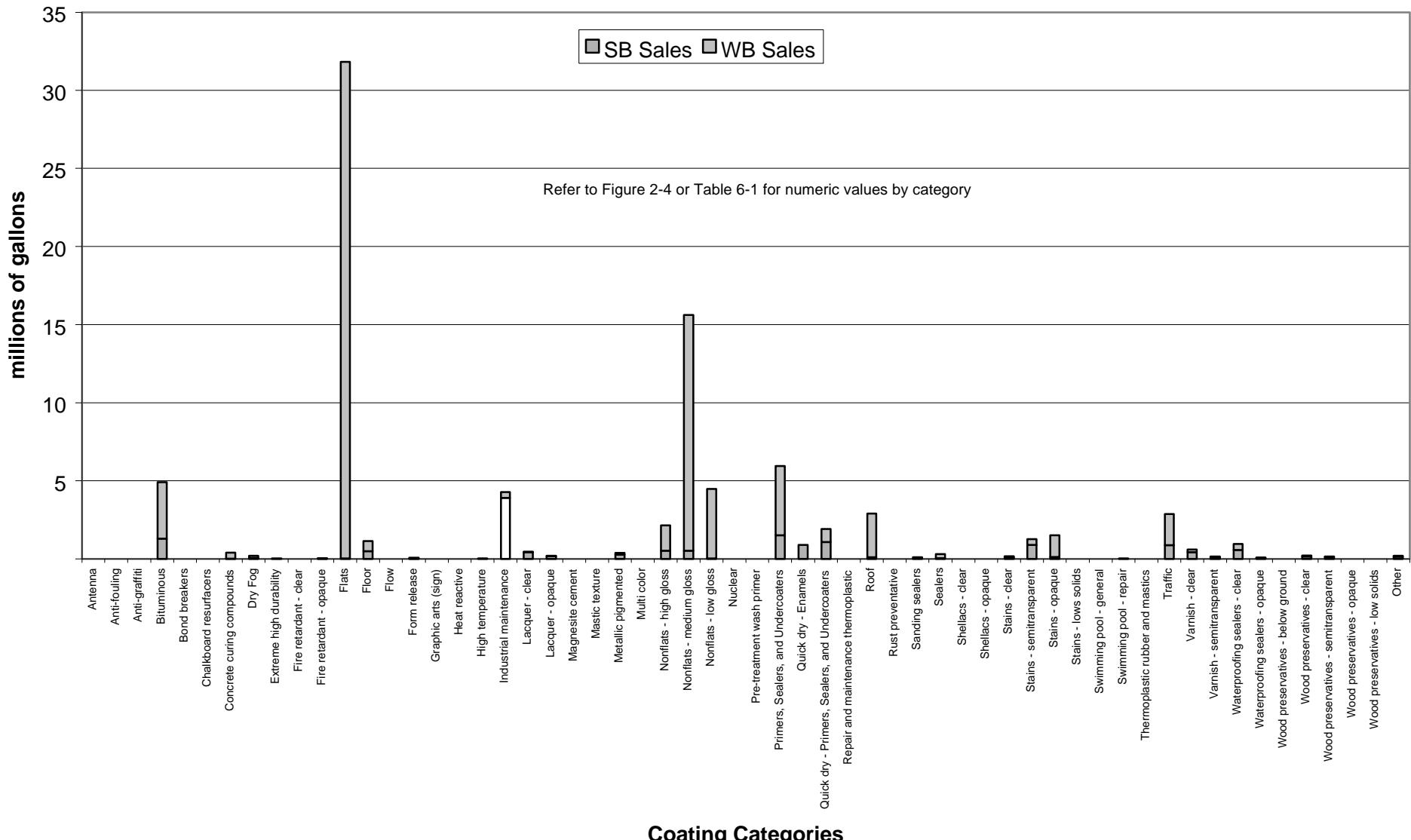
The Top 10 categories account for 88 % of total sales  
or approximately 77 million gallons.



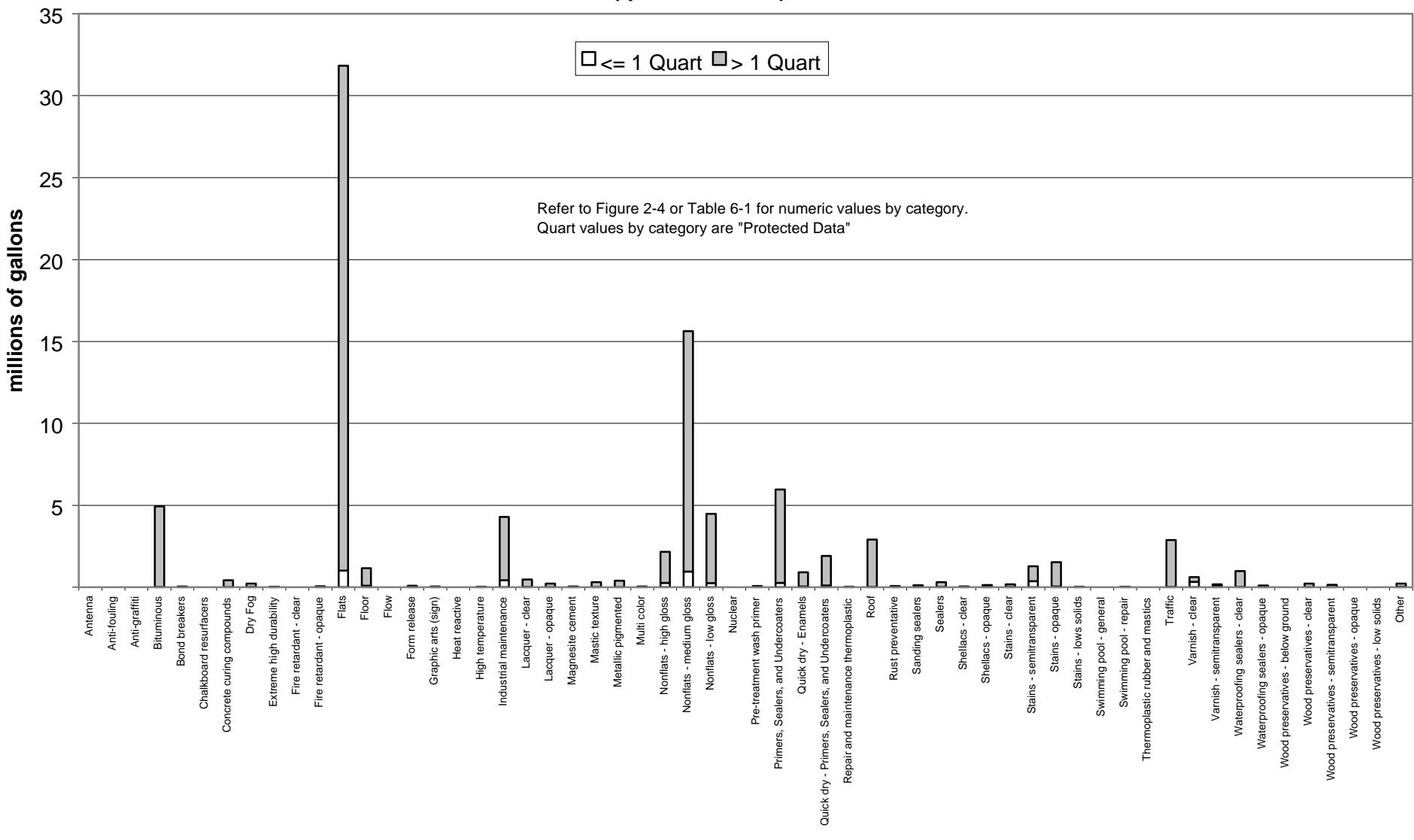
**Figure 2-4**  
**Total Sales by Volume**  
**by Category**



**Figure 2-5**  
**Total Sales by Volume**  
**by Category**  
**(Solvent-Borne & Water-Borne breakout)**

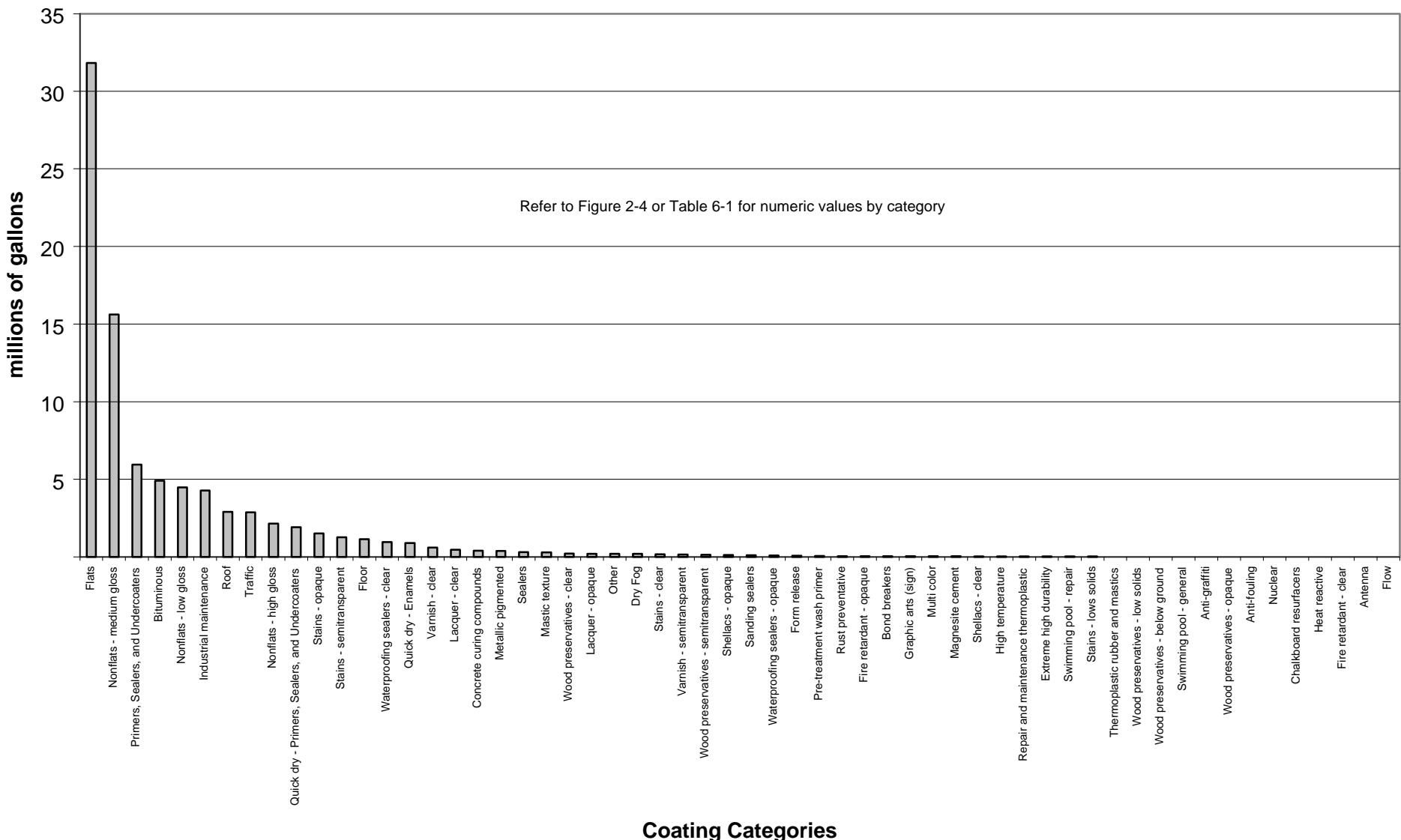


**Figure 2-6**  
**Total Sales Volume**  
**by Category**  
**(quart breakout)**



### Coating Categories

**Figure 2-7**  
**Total Sales by Volume (Descending)**  
**by Category**



## Chapter 3 – Emissions

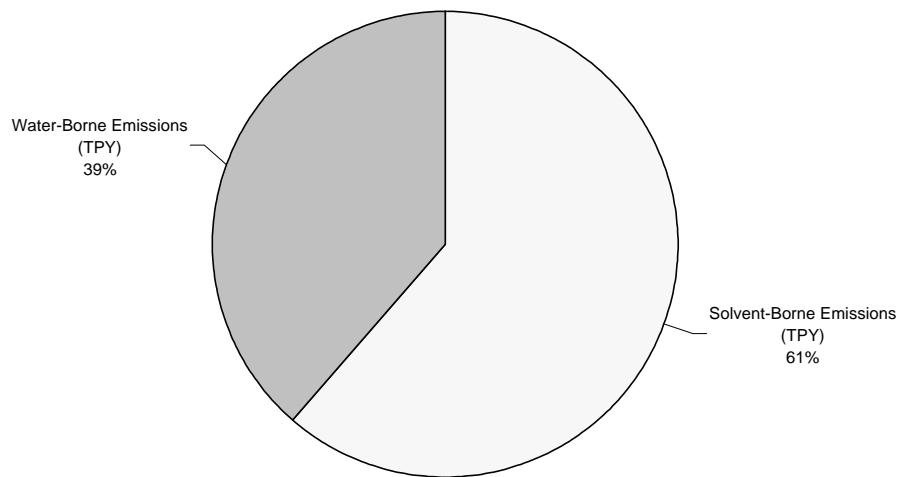
Emissions in 1996 from architectural coatings, as estimated from the 1998 survey data, are about 36,300 tons of VOC per year, or about 100 tons per day. The emissions estimated from the 1998 survey are calculated by multiplying the weight of VOC in each coating by the coating volumes for each category, with the appropriate conversion factors. The emissions presented in these figures do not include emissions from thinning and clean-up associated with solvent-borne coatings, which are included in the ARB's emissions inventory for architectural coatings .

This section includes the following figures:

- Figure 3-1 shows the split between emissions from solvent-borne and water-borne coatings.
- Figure 3-2 depicts the top ten 1998 architectural coatings survey categories by emissions. The top ten emission categories account for about 76 percent of the total emissions, or about 27,600 tons per year.
- Figure 3-3 shows the emissions for all categories in tons per year.
- Figure 3-4 shows the solvent-borne and water-borne breakouts within each category.
- Figure 3-5 shows the data arranged in descending order by emissions.

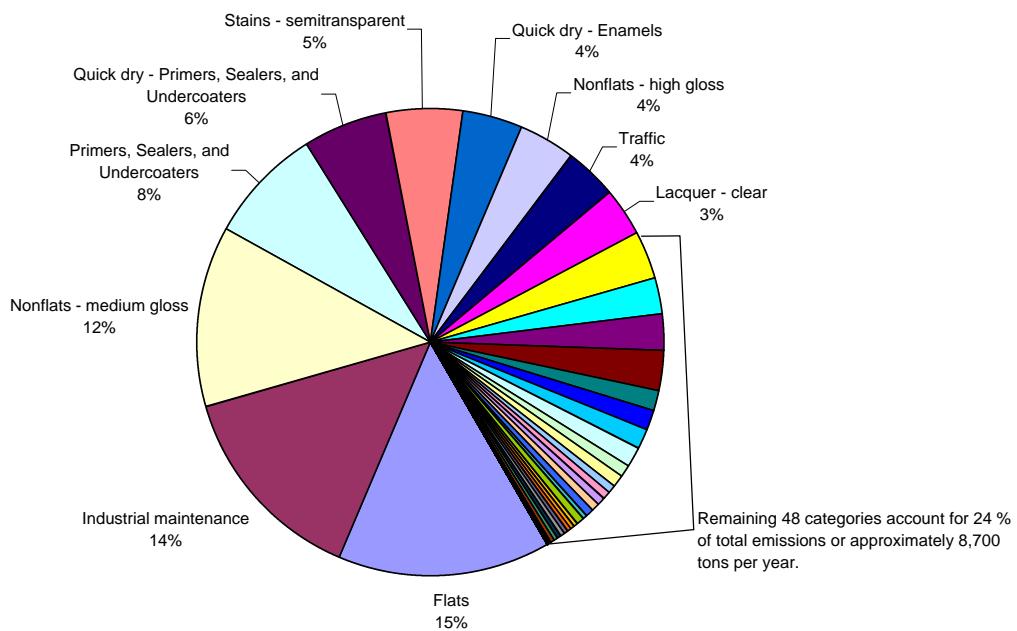
**NOTE:** Figures 3-1 through 3-5 do not include emissions from thinning and clean-up. If they did, the solvent-borne portion of the emissions would be greater. For such information, the reader is referred to Chapter 8, Table 8-1 (1993 / 1998 Survey Comparisons).

**Figure 3-1**  
**Total Emissions**  
**36,300 tons per year**  
**(Solvent-Borne & Water-Borne breakout)**

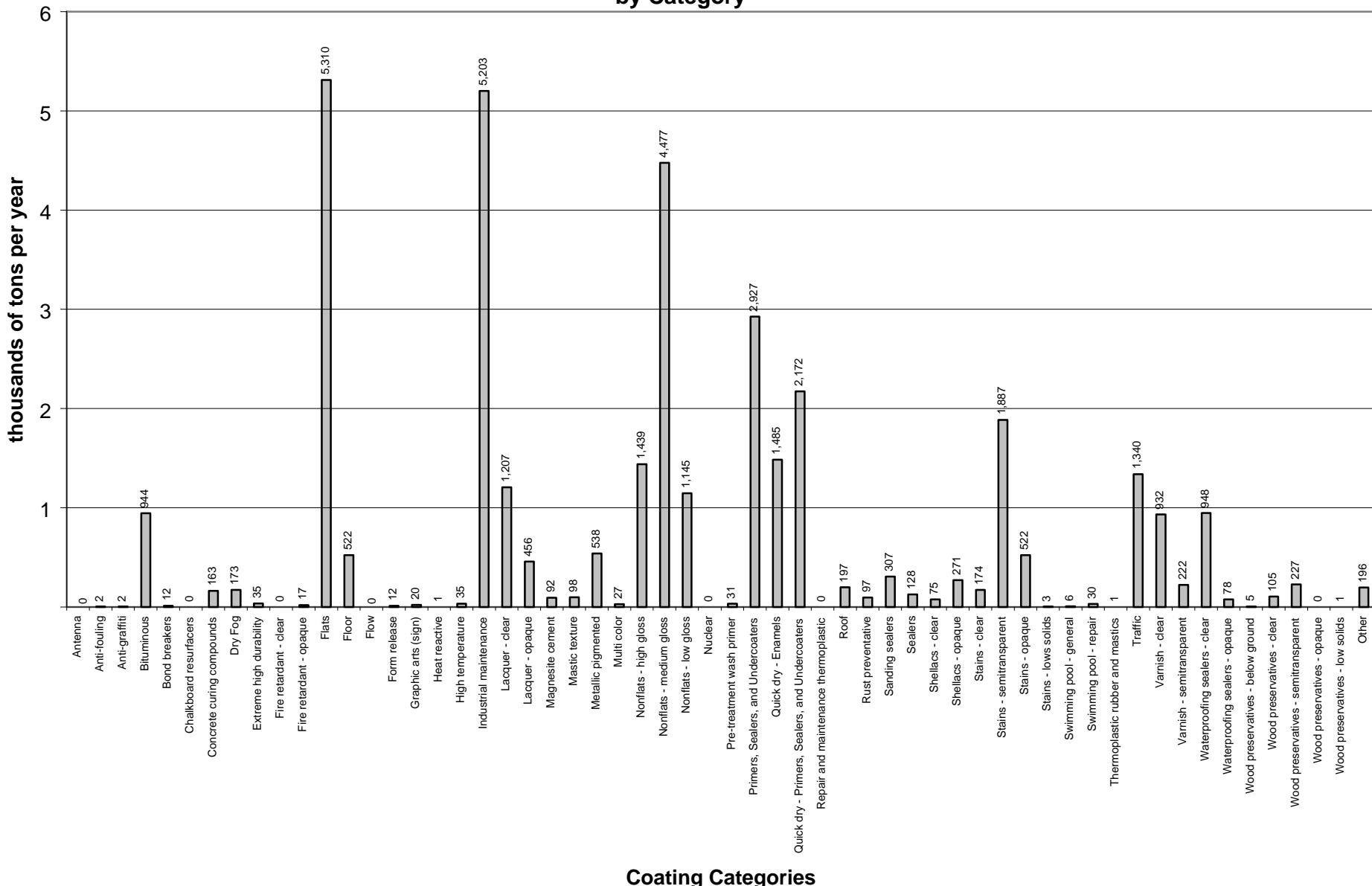


**Figure 3-2**  
**Top 10 Emission Categories**  
**(Total Emissions = 36,300 TPY)**

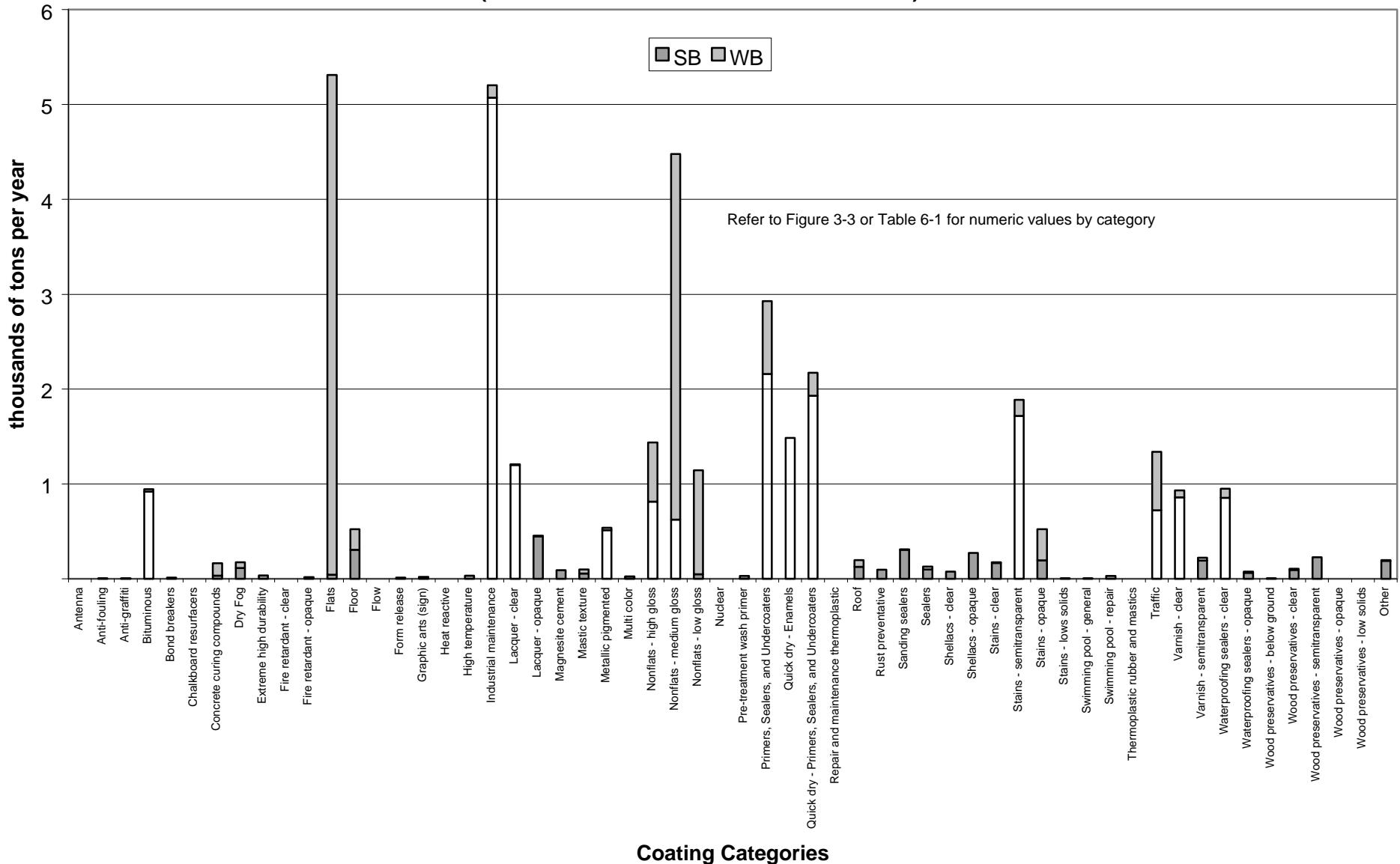
The Top 10 categories account for 76 % of total emissions or approximately 27,600 tons per year.



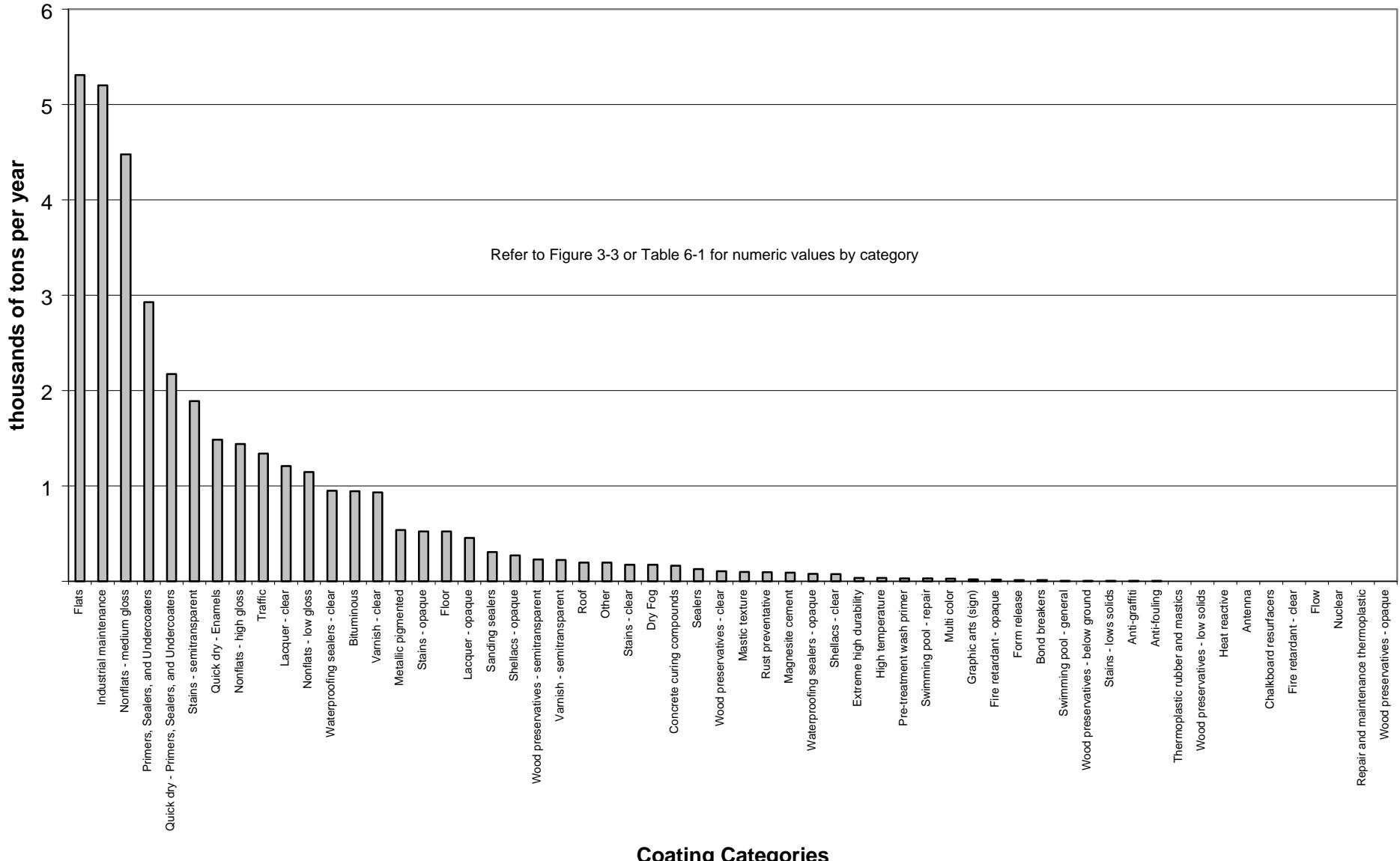
**Figure 3-3**  
**Total Emissions**  
**by Category**



**Figure 3-4**  
**Total Emissions**  
**by Category**  
**(Solvent-Borne & Water-Borne breakout)**



**Figure 3-5**  
**Total Emissions (Descending)**  
**by Category**



### Coating Categories

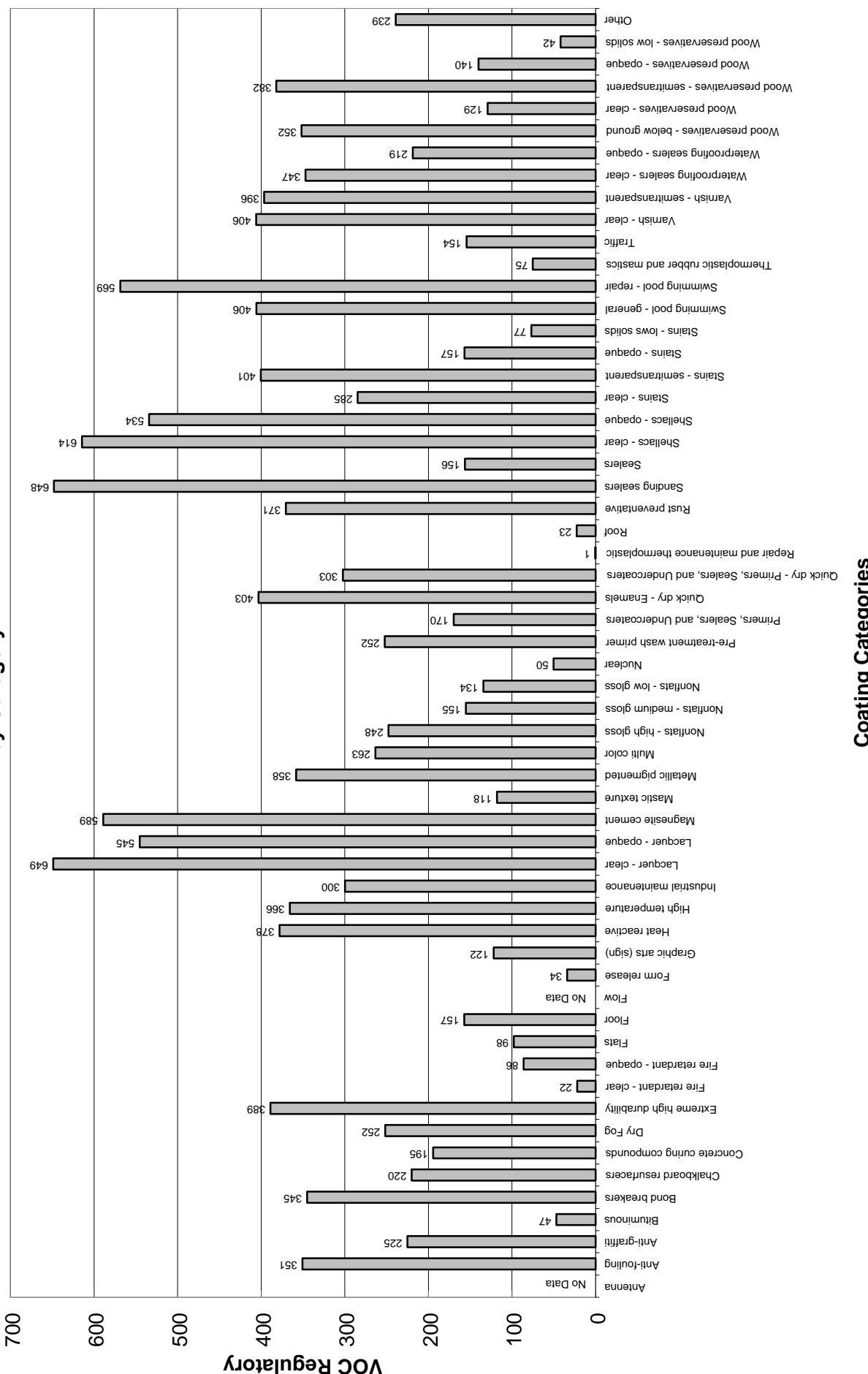
## Chapter 4 – VOC Contents

The VOC contents presented here are what are typically referred to as the “VOC content, less water and less exempt solvents”. We called this “VOC<sub>regulatory</sub>” in the 1998 survey. These figures simply present the sales-weighted average VOC<sub>regulatory</sub> contents, in grams per liter, by category.

This section includes the following figures:

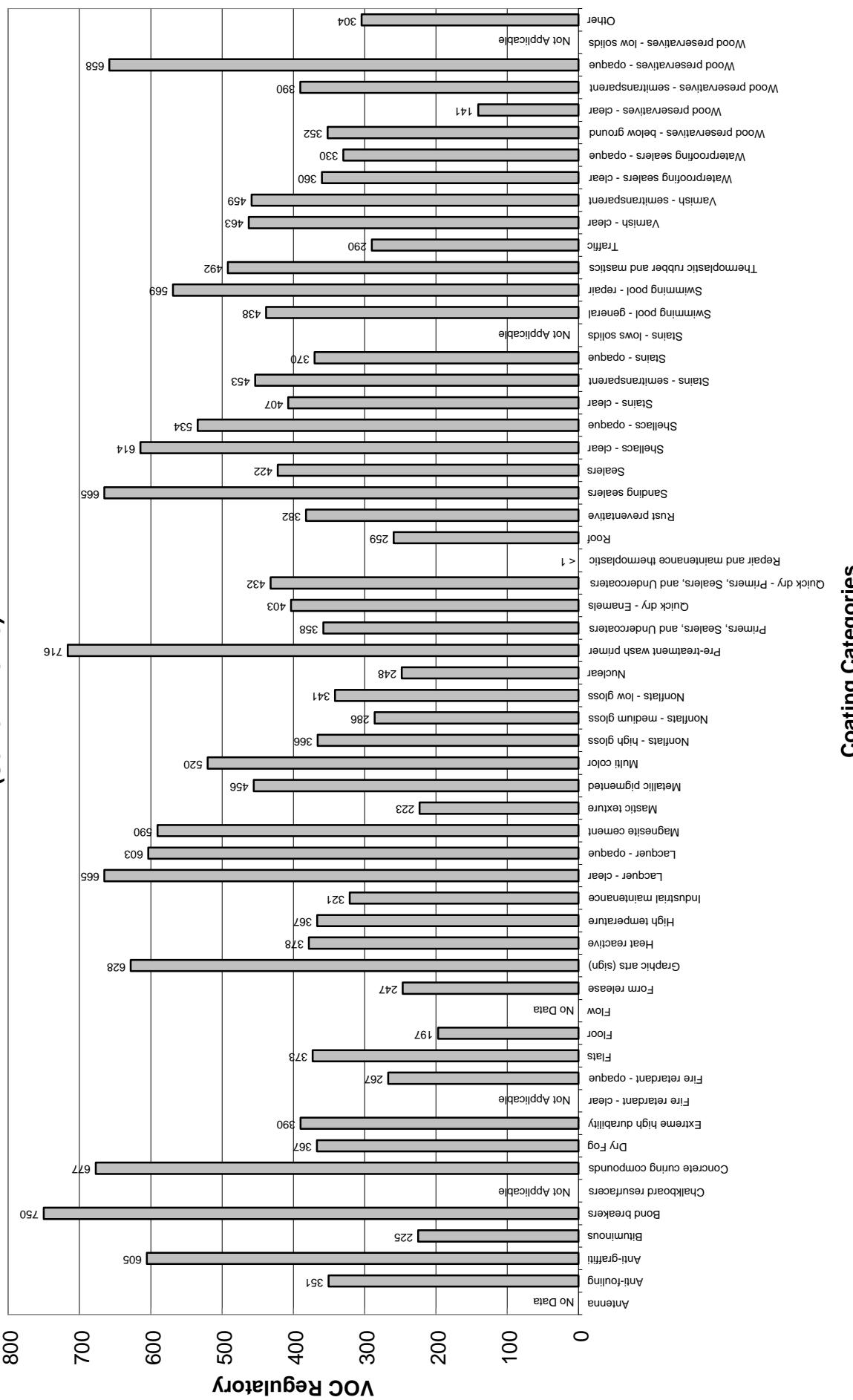
- Figure 4-1 shows the overall sales-weighted average VOC<sub>regulatory</sub> content by category.
- Figure 4-2 shows the solvent-borne sales-weighted average VOC<sub>regulatory</sub> content by category.
- Figure 4-3 shows the water-borne sales-weighted average VOC<sub>regulatory</sub> content by category.

**Figure 4-1**  
**Overall Sales Weighted Average of VOC Regulatory by Category**



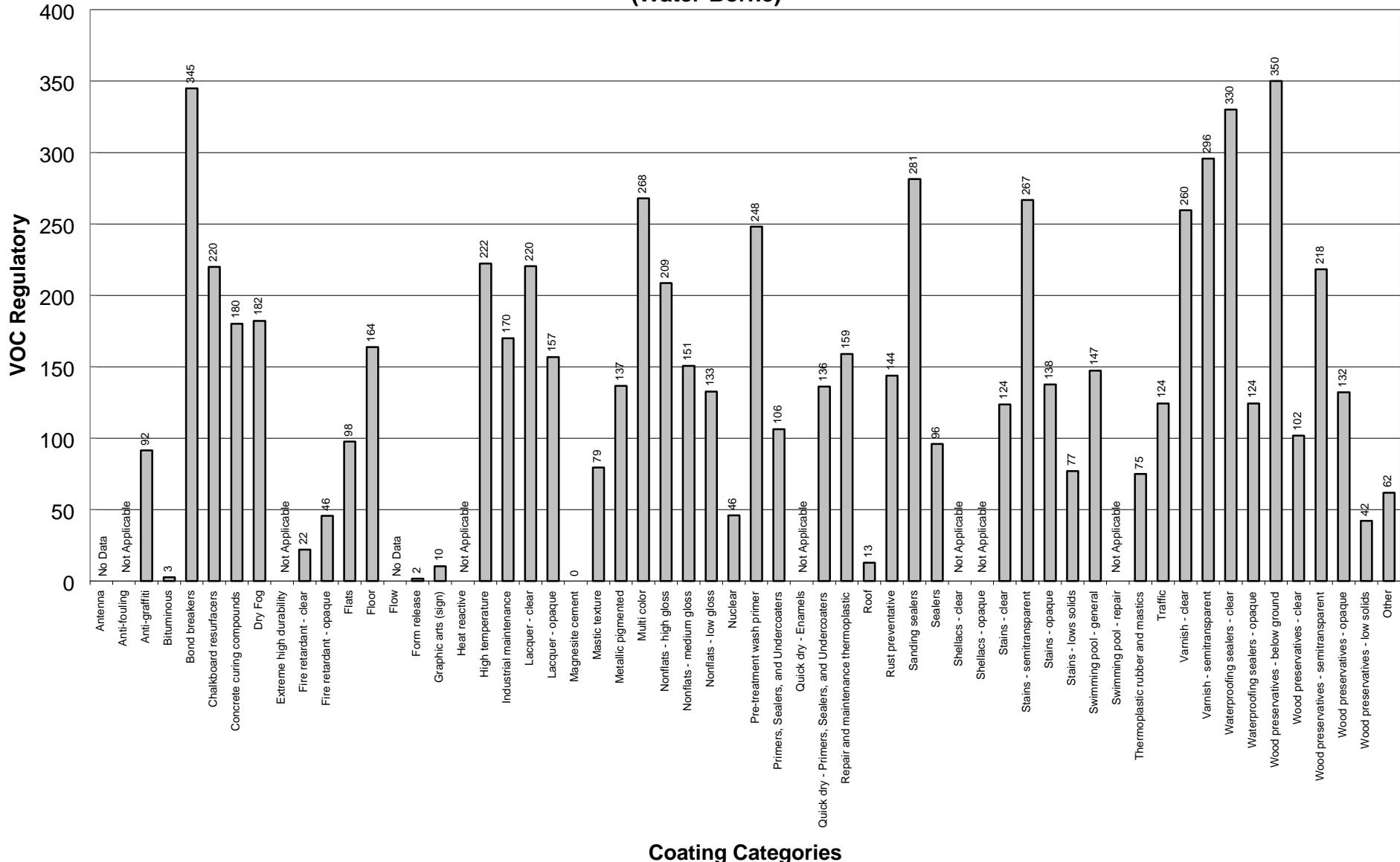
**Coating Categories**

**Figure 4-2  
Sales Weighted Average of VOC Regulatory by Category (Solvent-Borne)**



**Coating Categories**

**Figure 4-3**  
**Sales Weighted Average of VOC Regulatory**  
**by Category**  
**(Water-Borne)**



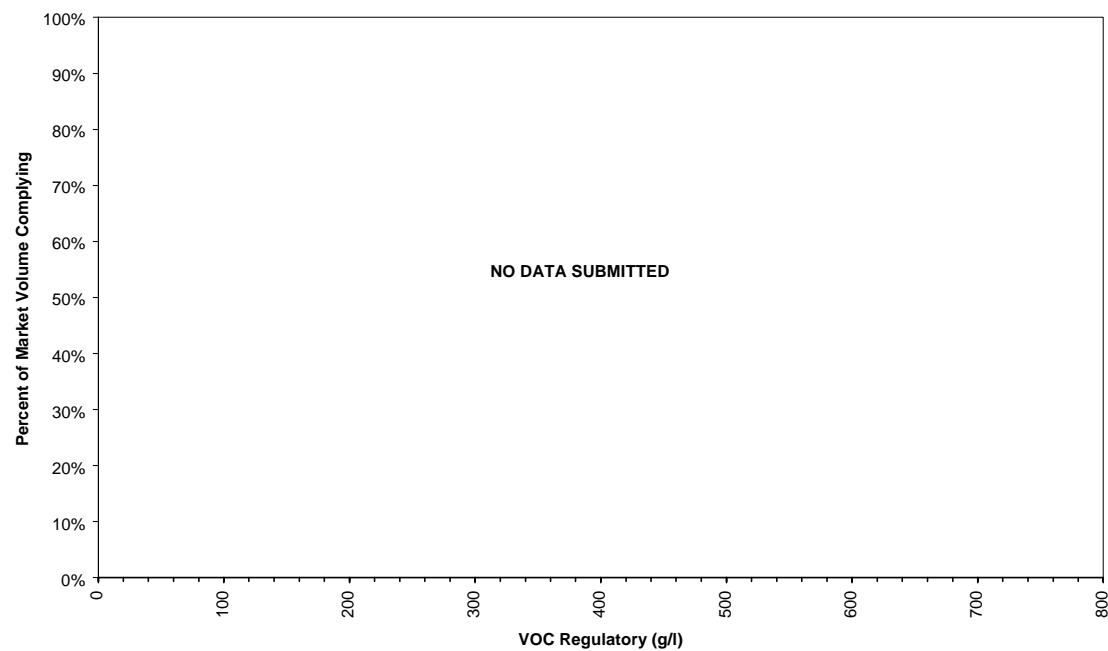
## Chapter 5 - Histograms & Cumulative Percent Graphs

The histogram graphs of VOC<sub>Regulatory</sub> (grams/liter) and coating sales (gallons) were generated for all 58 coating categories to depict the relative distribution of sales volume in increments of 50 g/l. Each histogram contains a general summary of the category's total sales, sales displayed, total emissions, and the overall VOC<sub>Regulatory</sub> (g/l) as a sales weighed average (SWA).

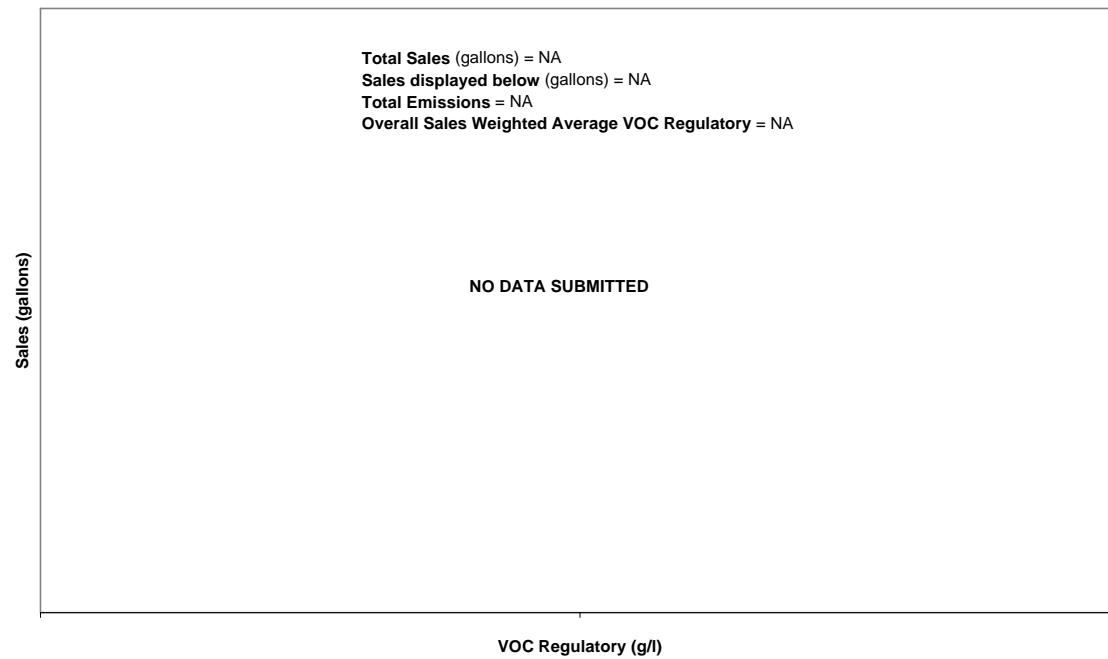
VOC<sub>Regulatory</sub> ranges that could not be displayed without compromising the "Three Company Rule" contain the words "Protected Data." If a VOC range is not shown, it is because there are no data for that range.

The cumulative percent graphs were also generated for all 58 coatings categories to depict the percent of market volume complying as VOC<sub>Regulatory</sub> increases. These graphs were provided to compliment the histograms, especially in categories where the histograms have large areas of "Protected Data."

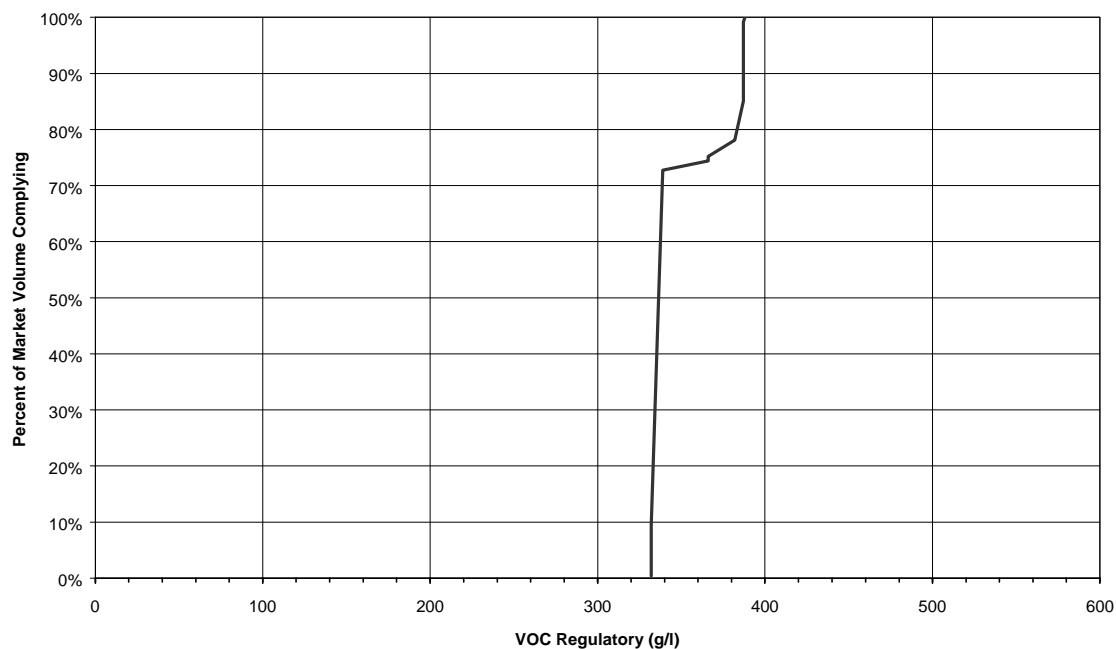
**Figure 5-1**  
**Antenna**



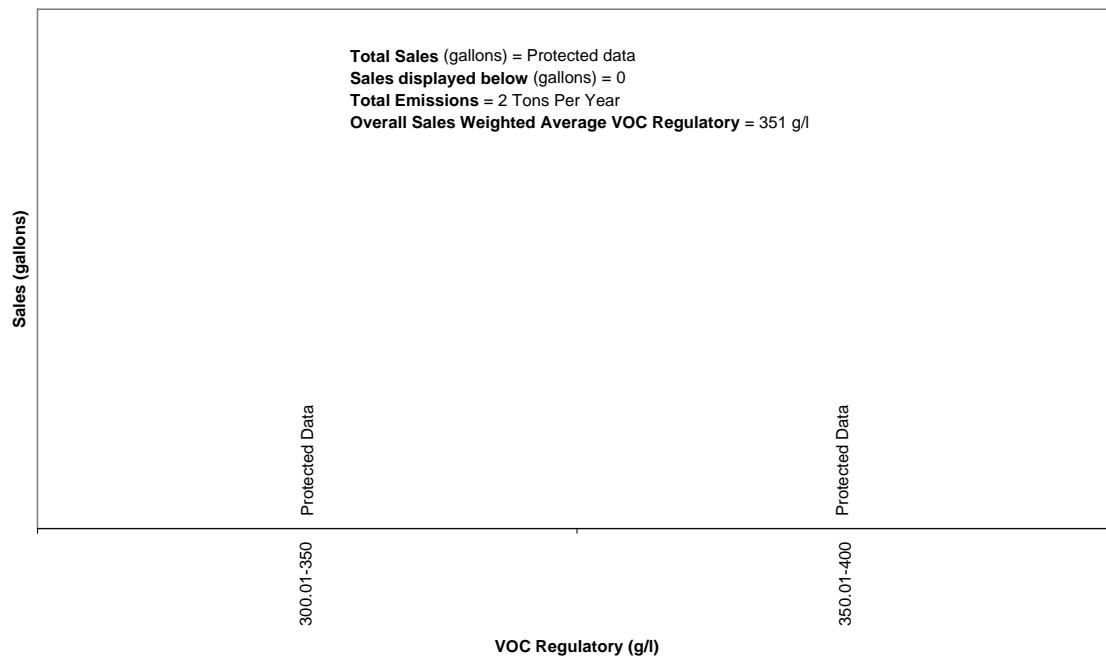
**Figure 5-2**  
**Antenna**



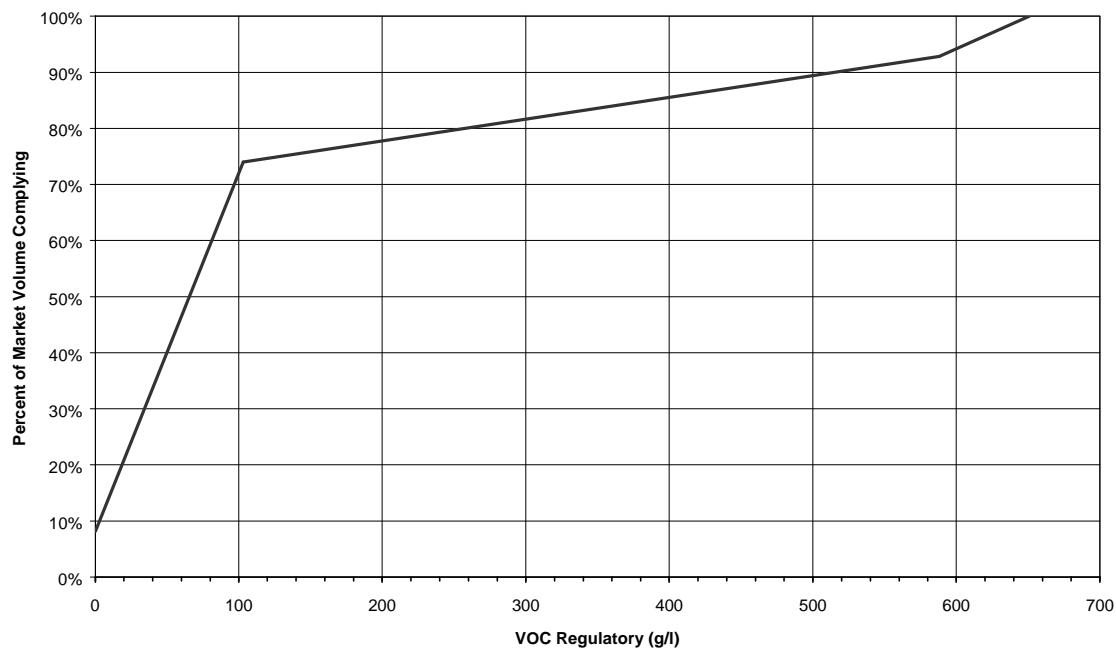
**Figure 5-3**  
Anti-fouling



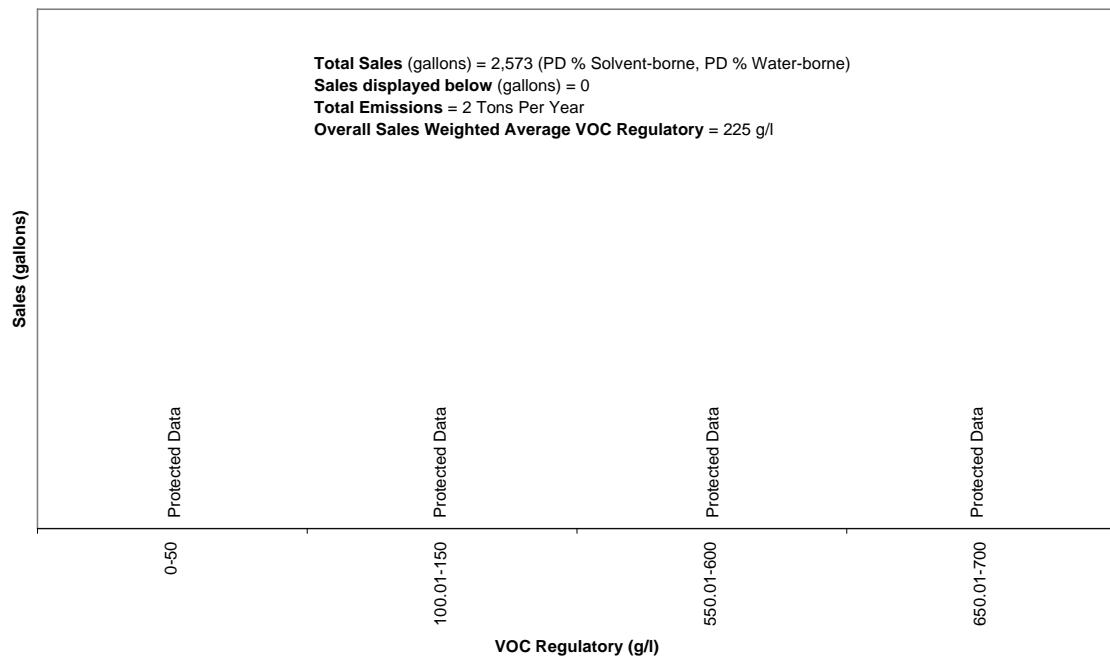
**Figure 5-4**  
Anti-Fouling



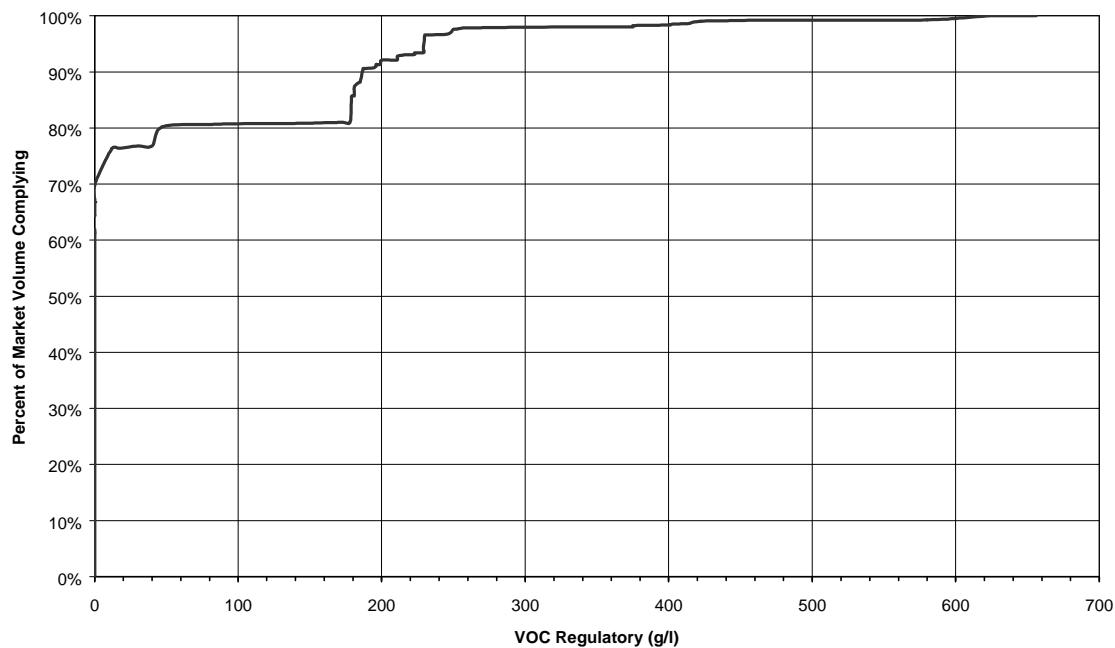
**Figure 5-5**  
Anti-graffiti



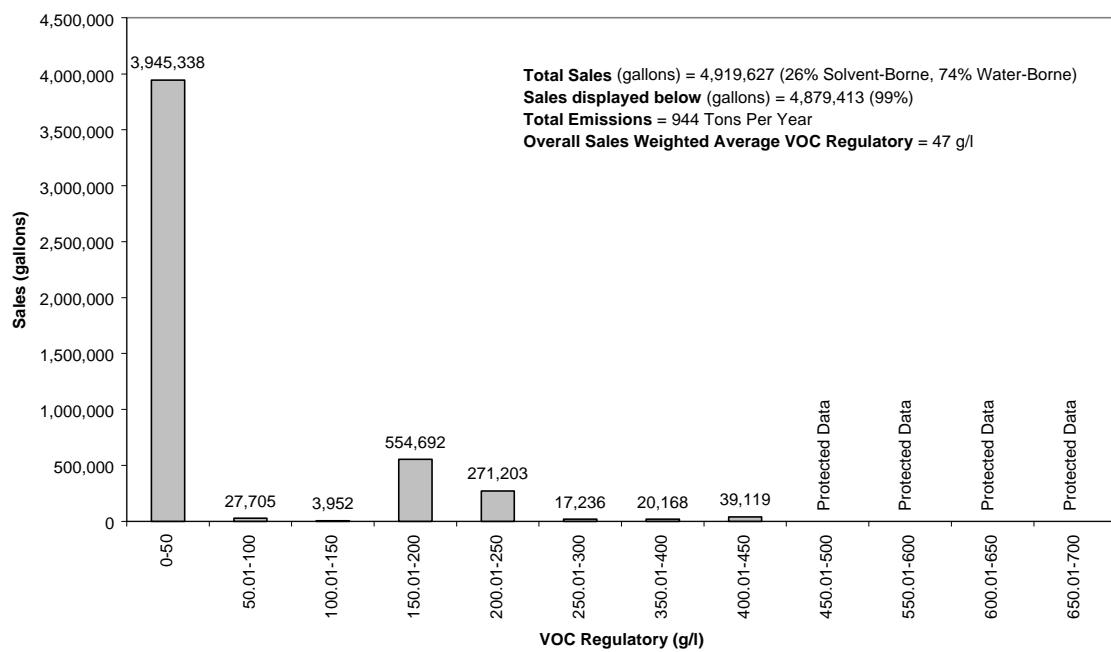
**Figure 5-6**  
Anti-Graffiti



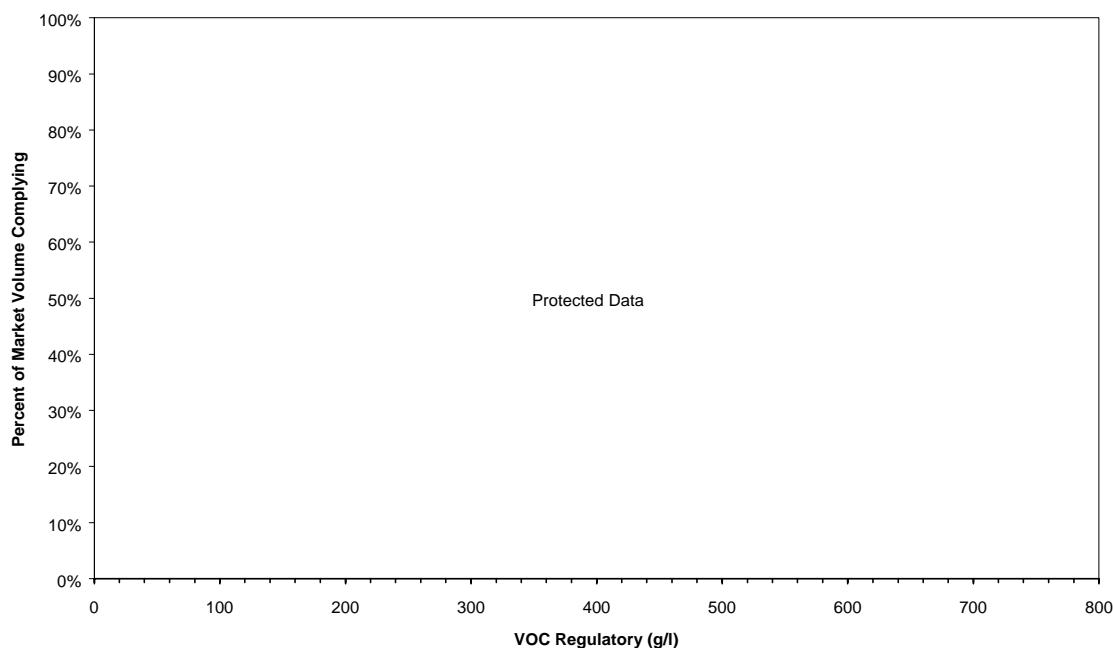
**Figure 5-7**  
**Bituminous**



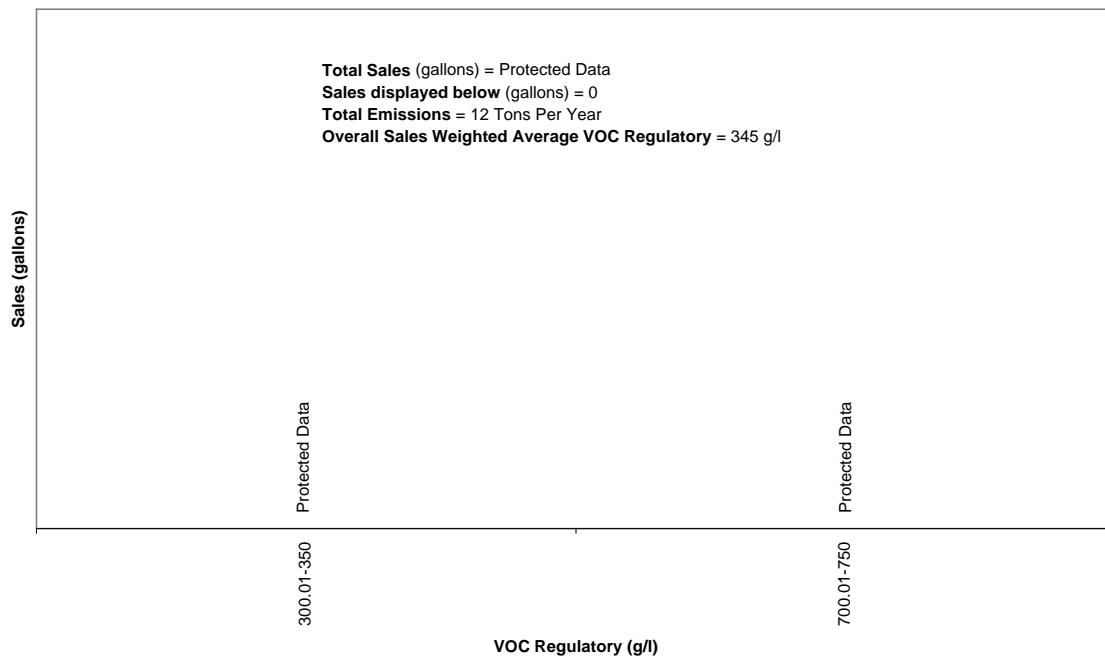
**Figure 5-8**  
**Bituminous**



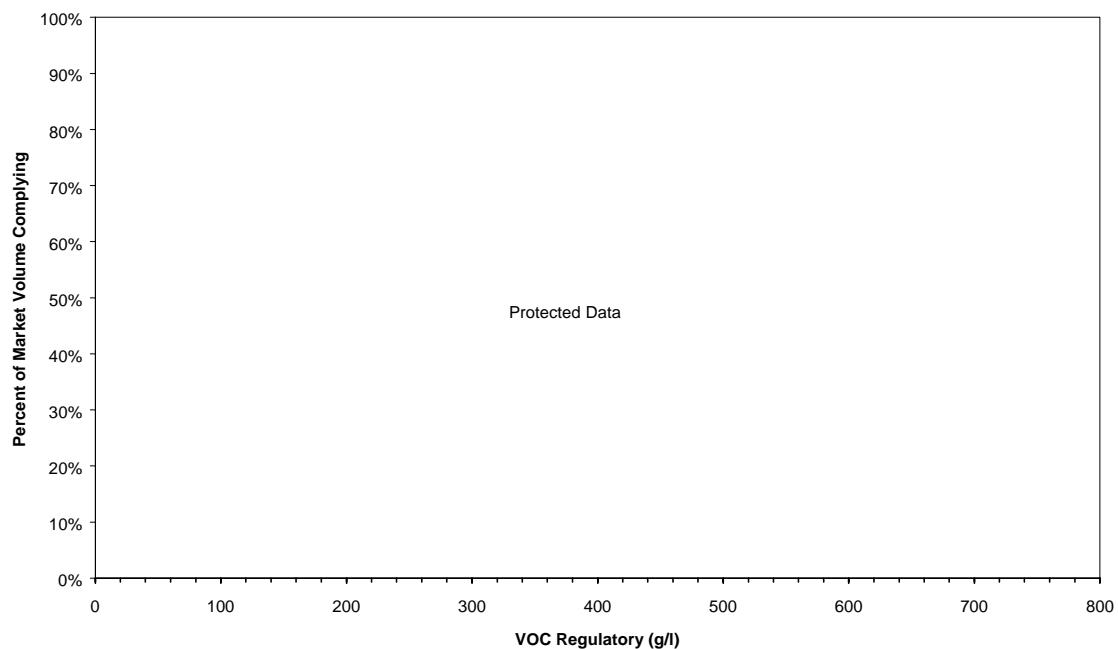
**Figure 5-9  
Bond Breaker**



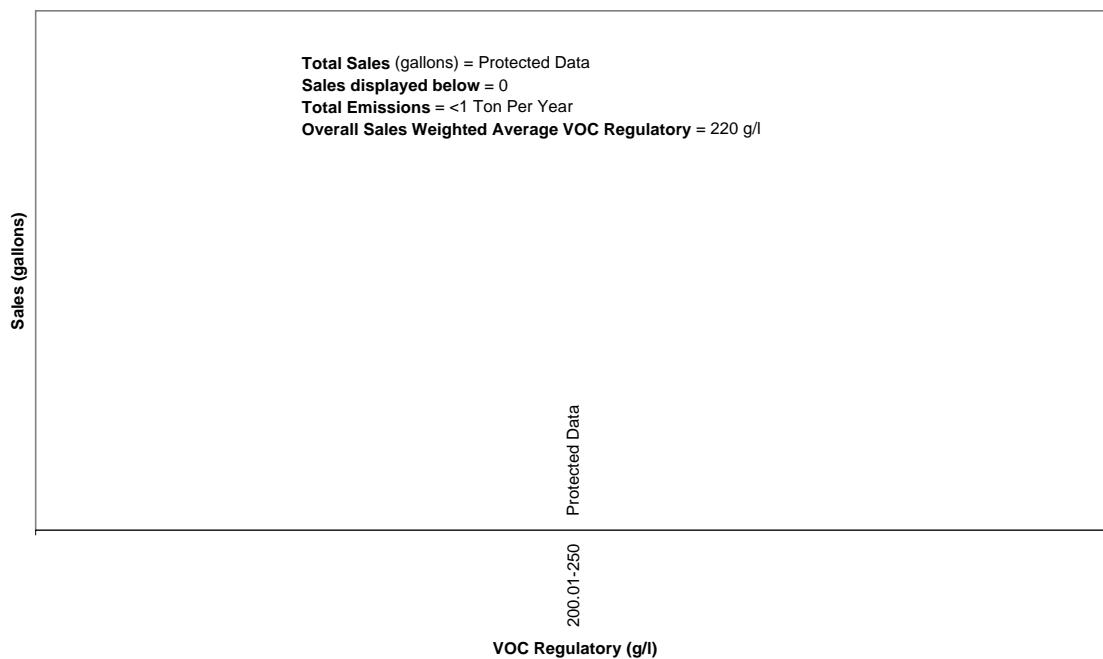
**Figure 5-10  
Bond Breaker**



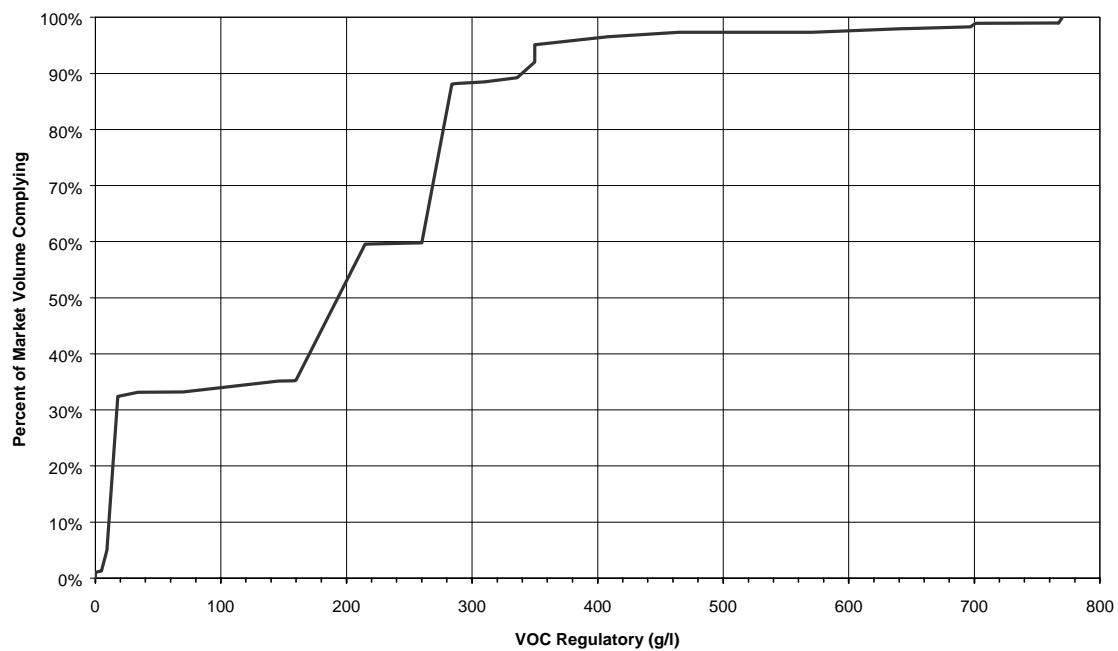
**Figure 5-11**  
**Chalkboard Resurfacer**



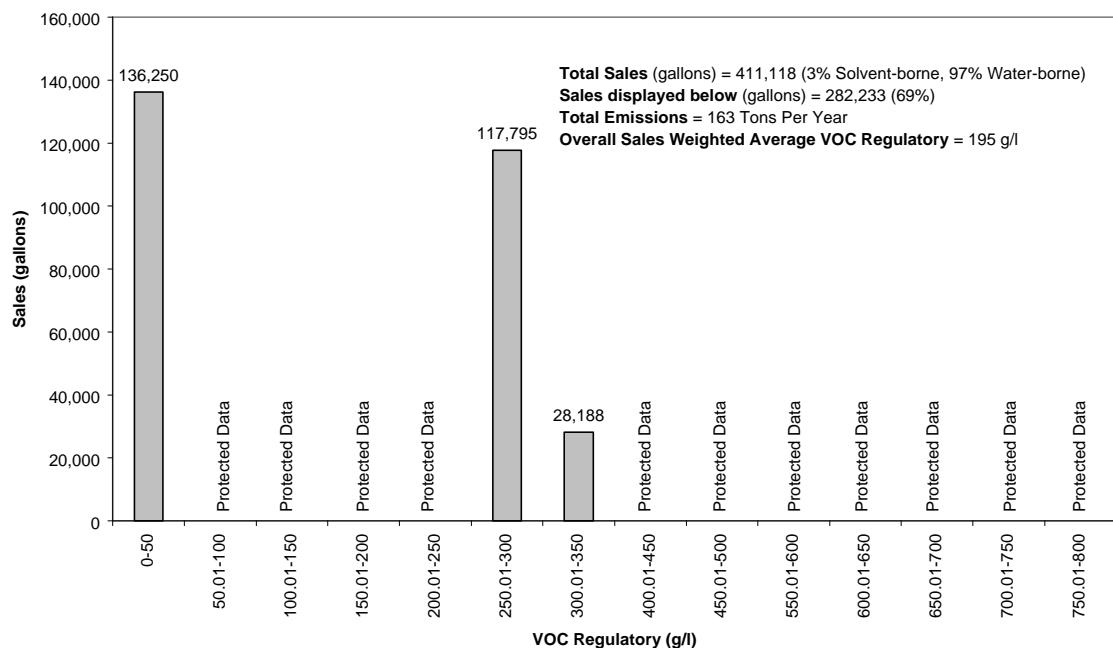
**Figure 5-12**  
**Chalkboard Resurfacer**



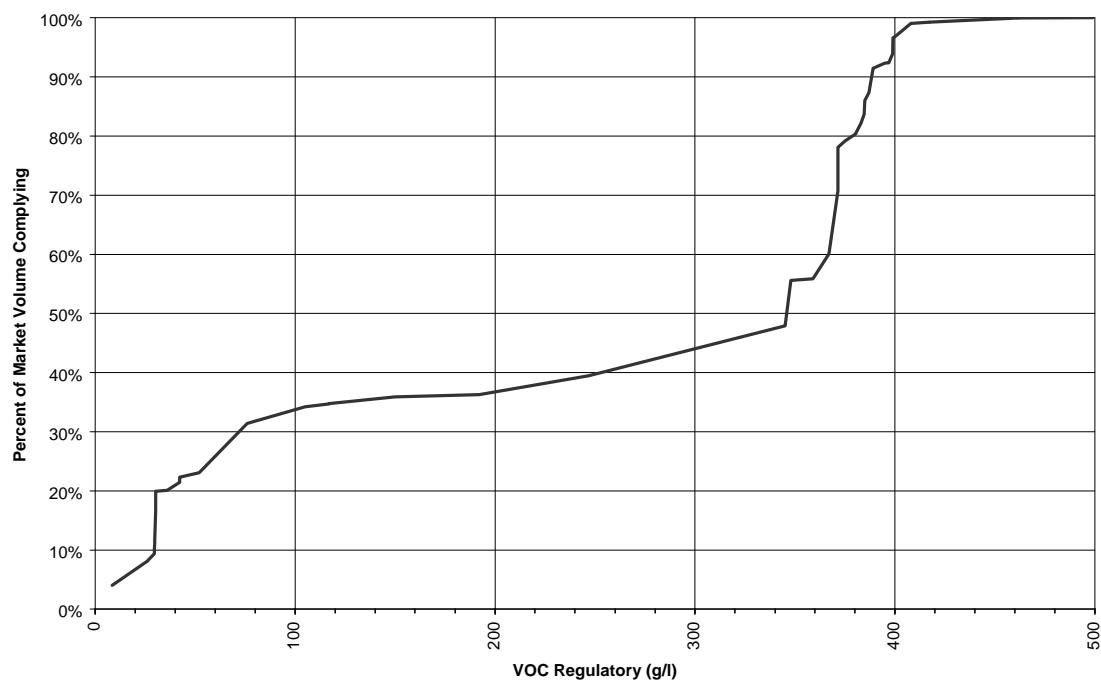
**Figure 5-13**  
**Concrete Curing Compound**



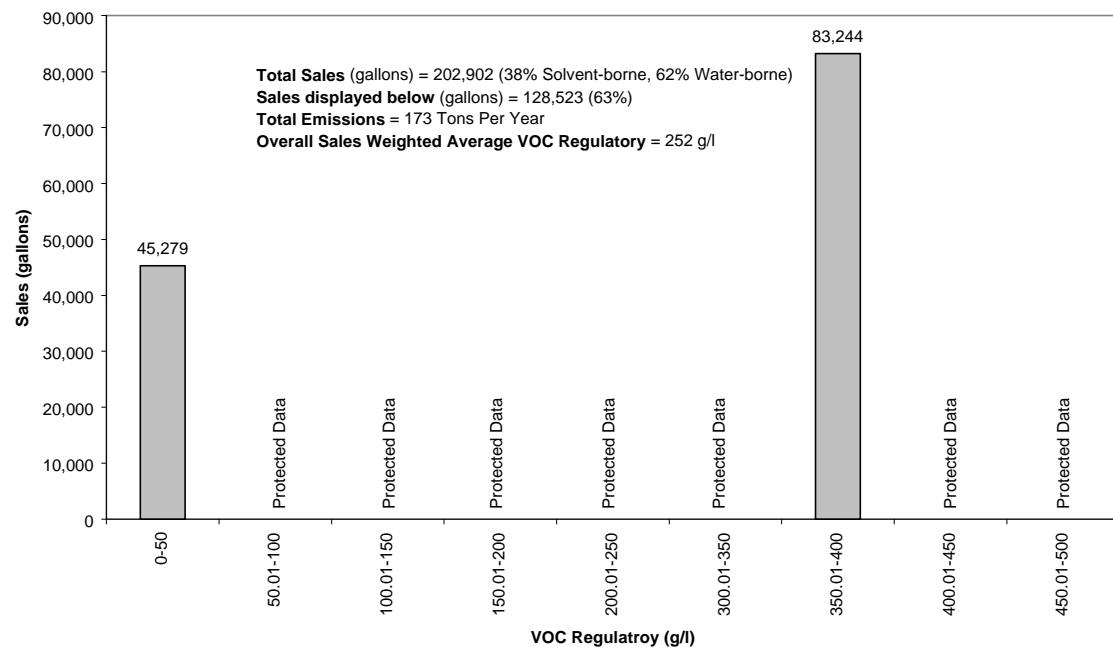
**Figure 5-14**  
**Concrete Curing Compound**



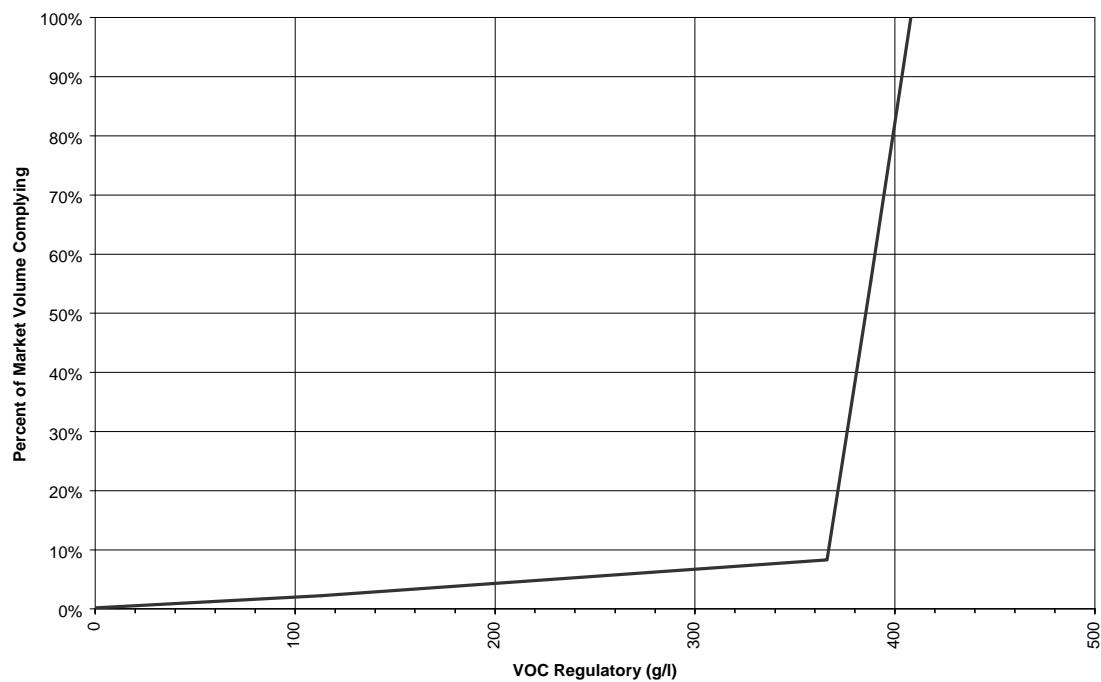
**Figure 5-15**  
**Dry Fog**



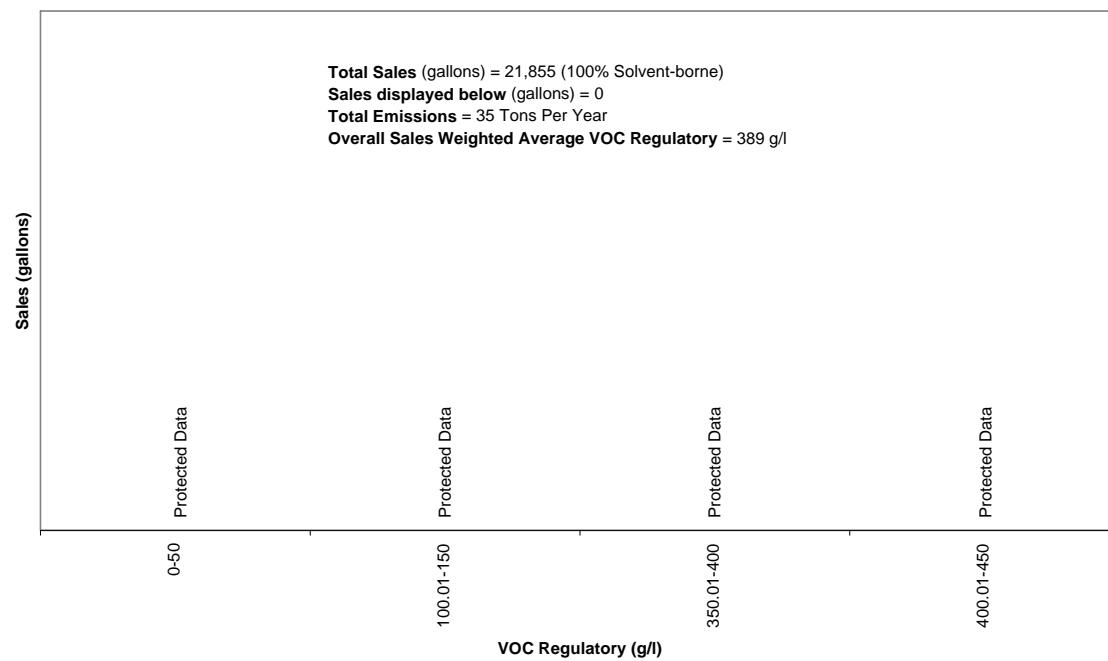
**Figure 5-16**  
**Dry Fog**



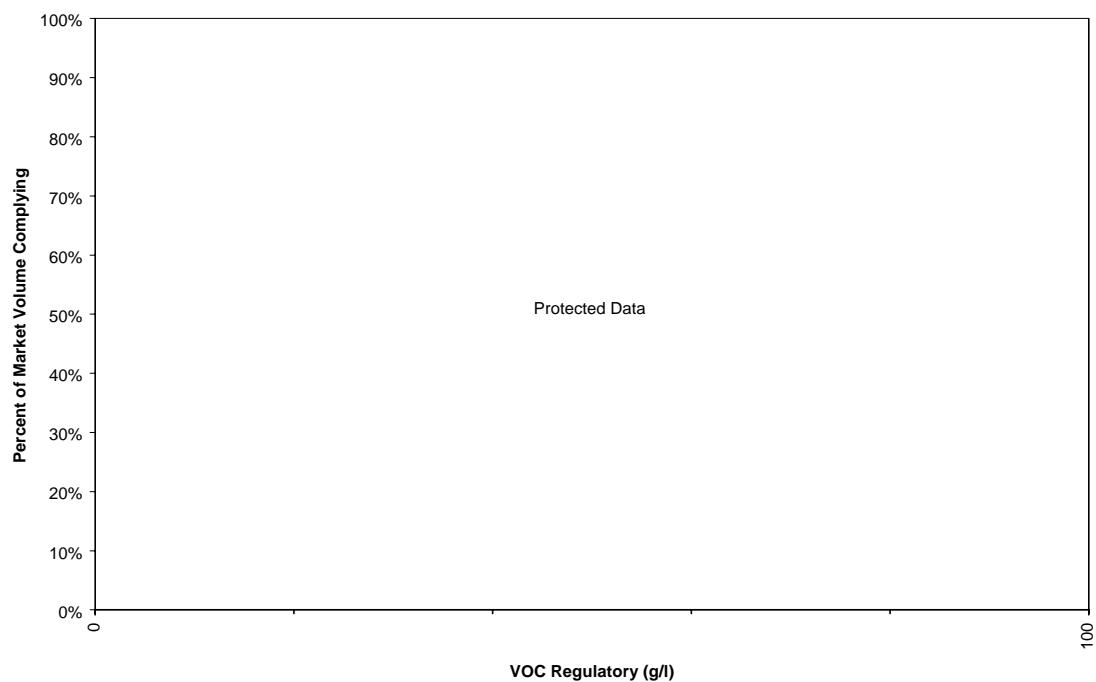
**Figure 5-17  
Extreme High Durability**



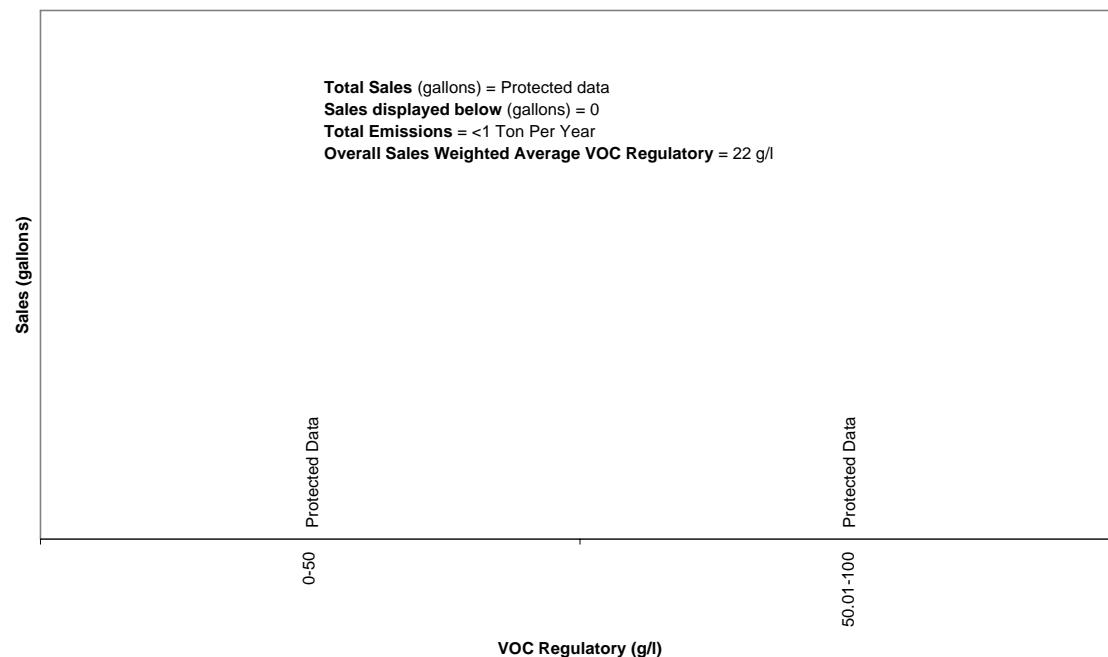
**Figure 5-18  
Extreme High Durability**



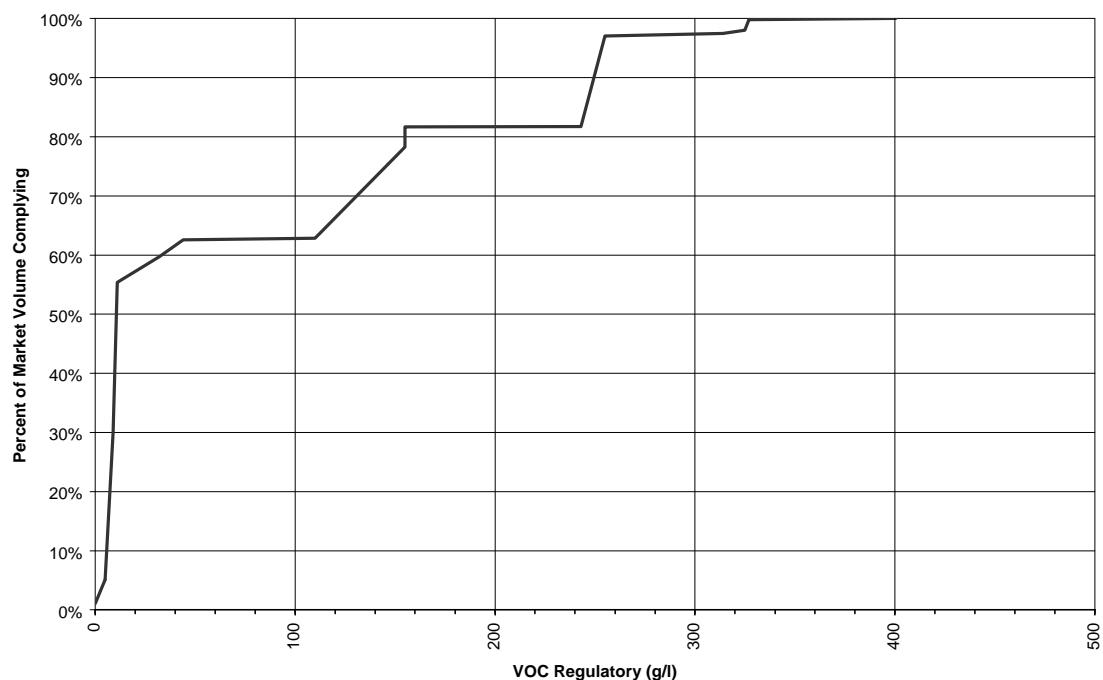
**Figure 5-19**  
**Fire Retardant - Clear**



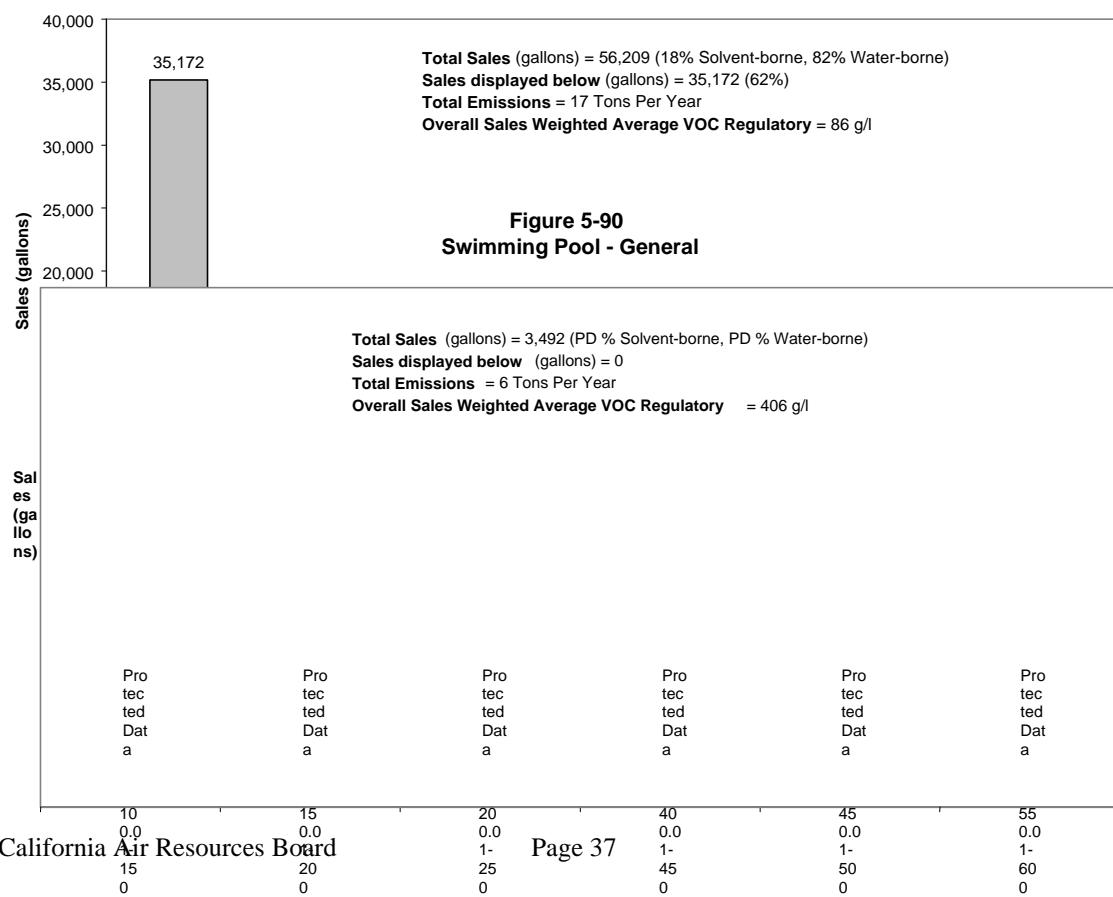
**Figure 5-20**  
**Fire Retardant - Clear**



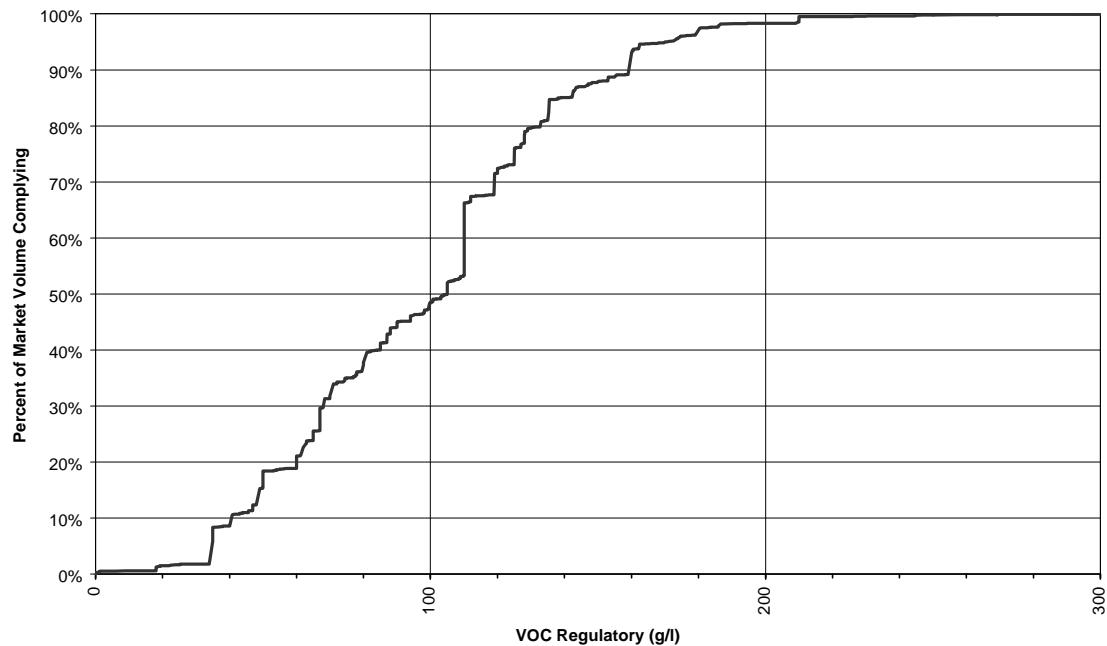
**Figure 5-21**  
**Fire Retardant - Opaque**



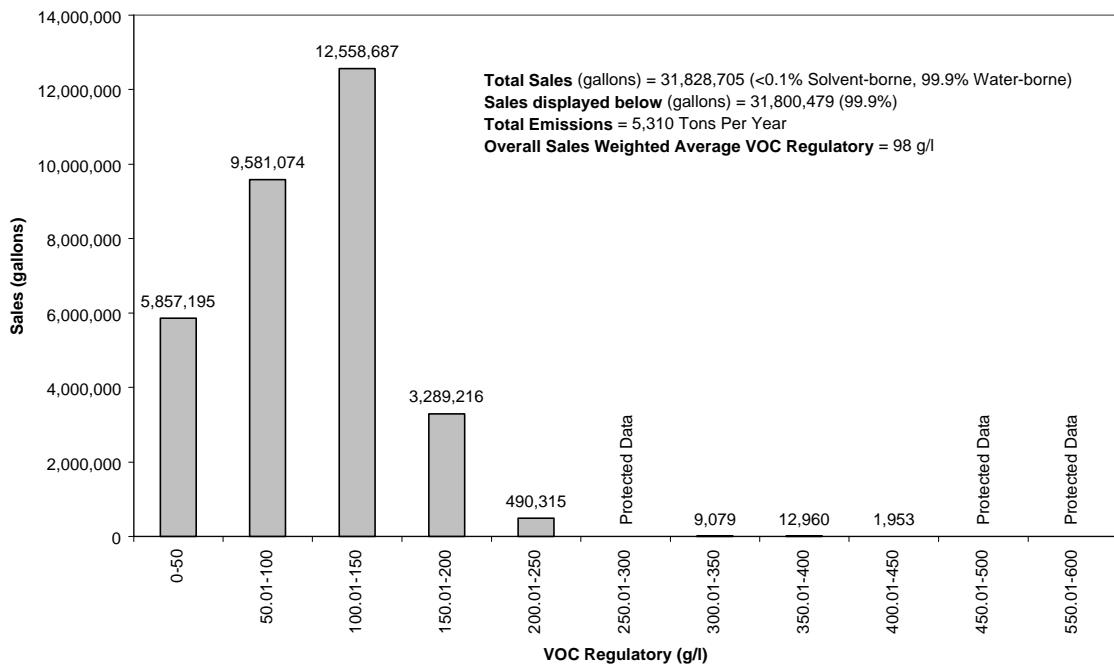
**Figure 5-22**  
**Fire Retardant - Opaque**



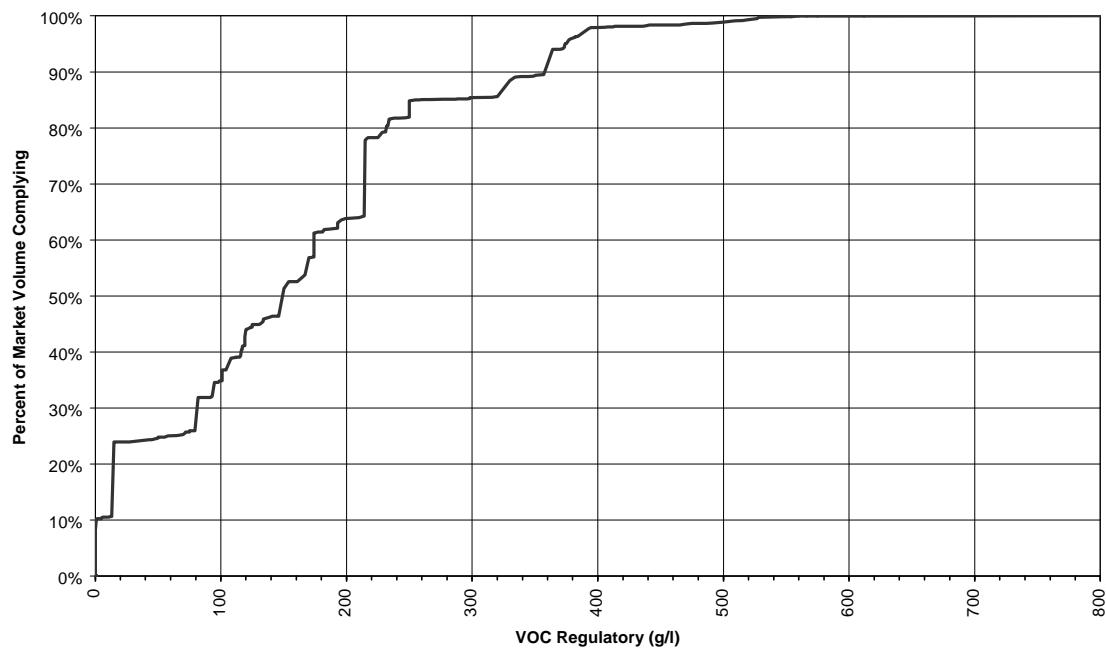
**Figure 5-23**  
**Flat**



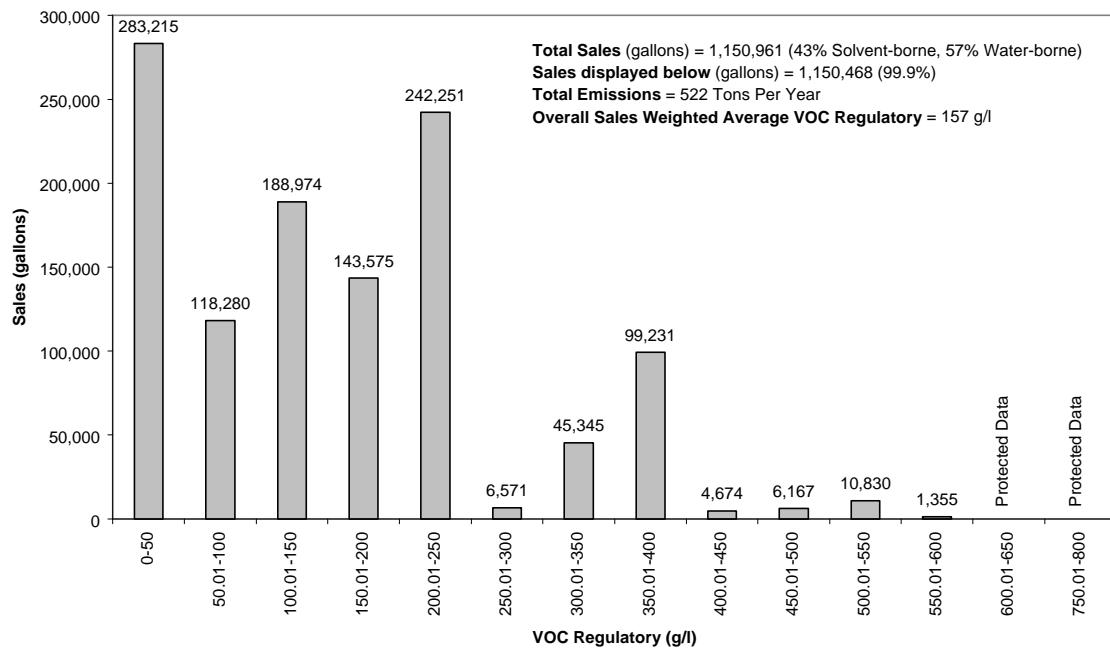
**Figure 5-24**  
**Flat**



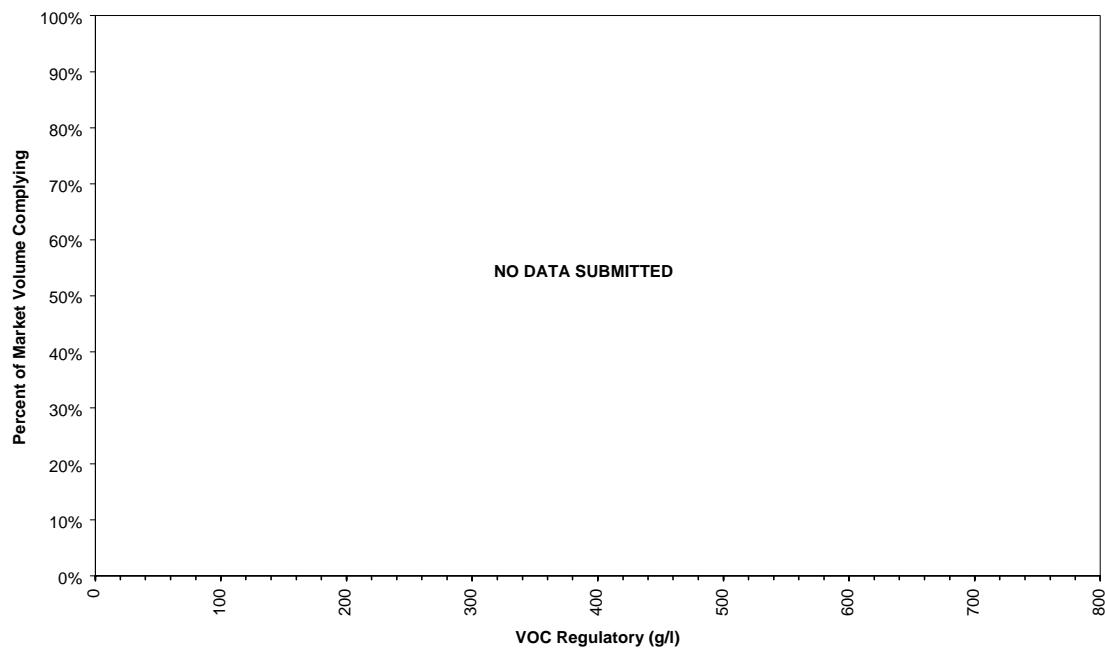
**Figure 5-25**  
**Floor**



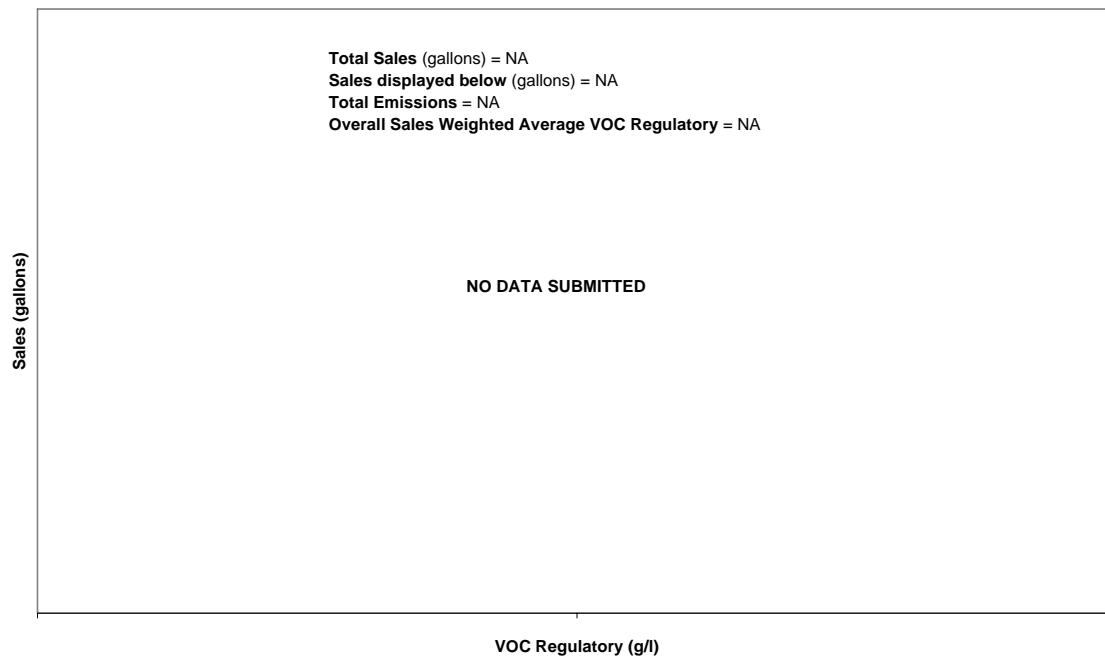
**Figure 5-26**  
**Floor**



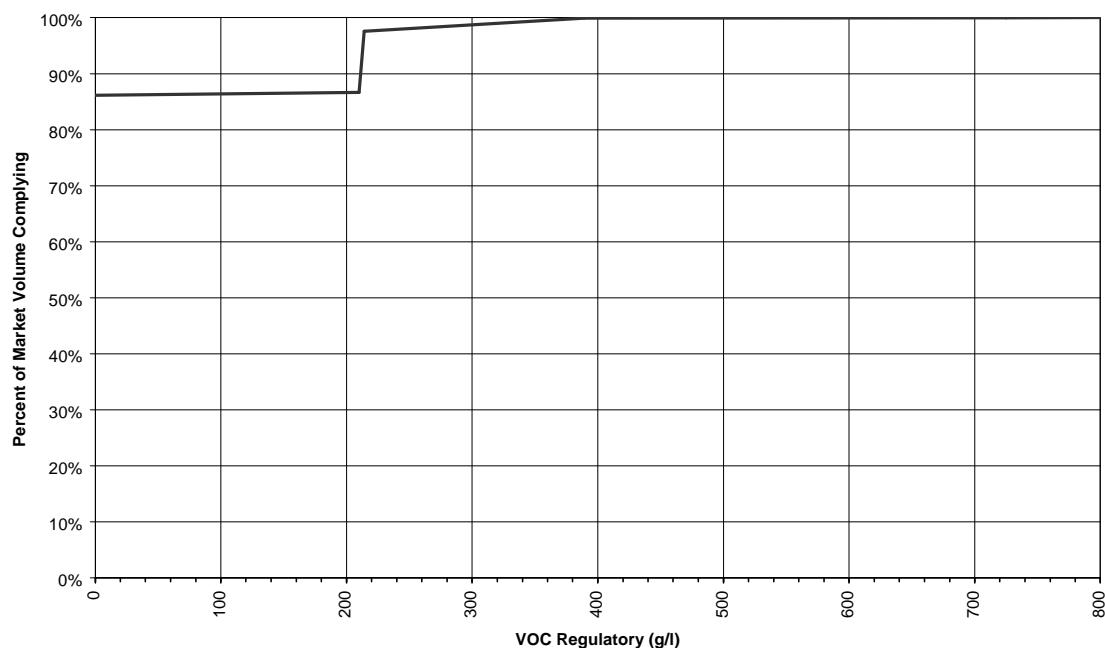
**Figure 5-27**  
**Flow**



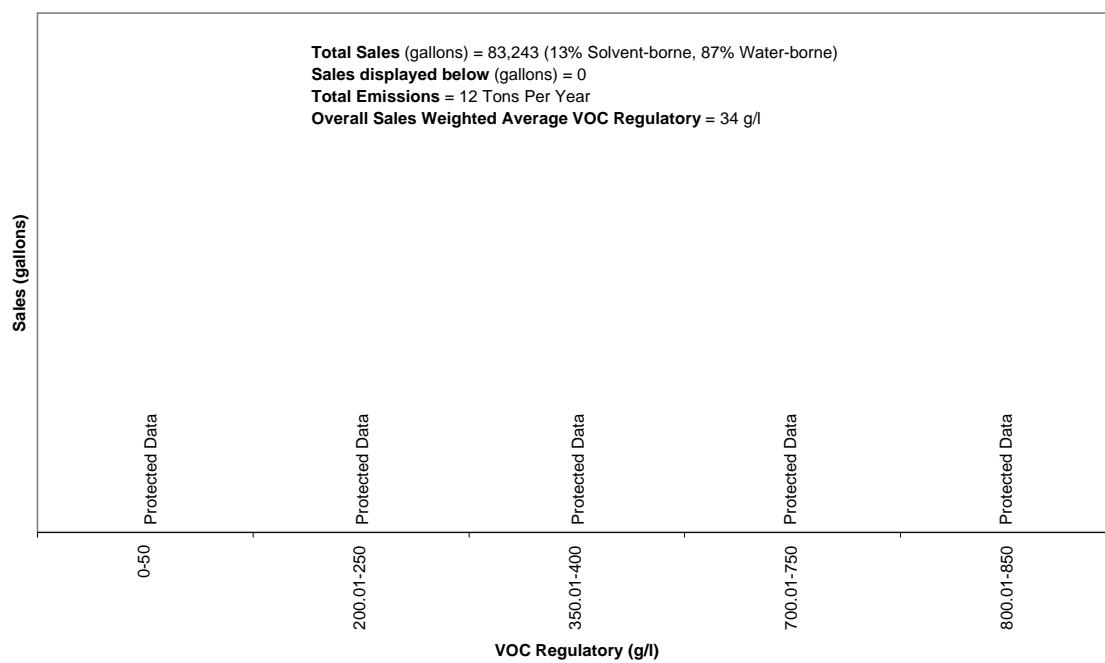
**Figure 5-28**  
**Flow**



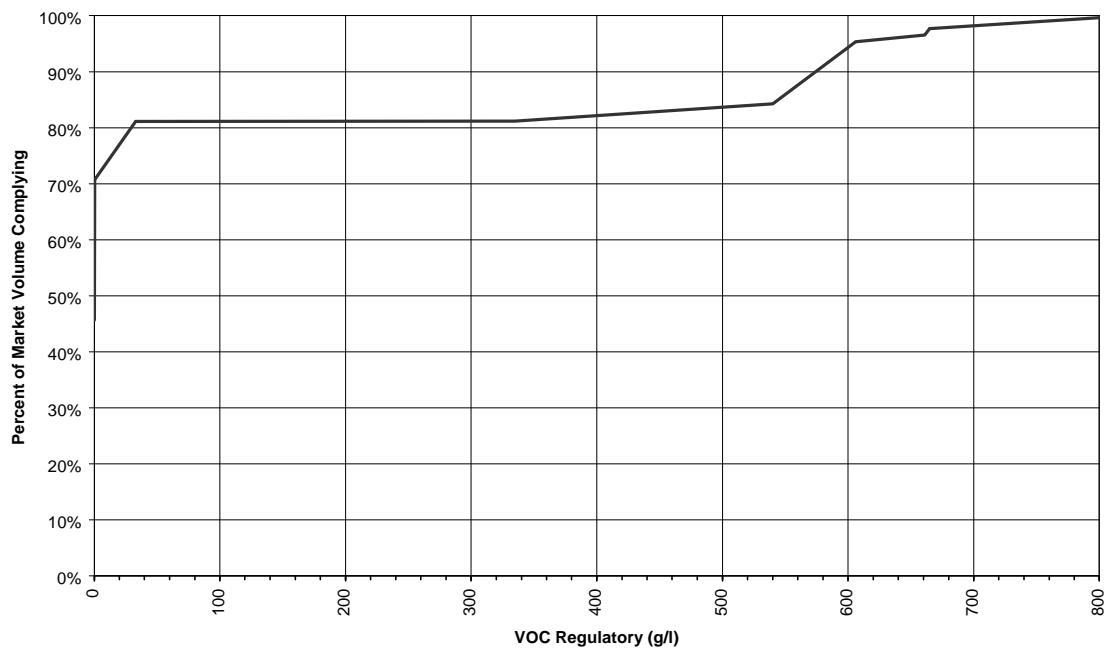
**Figure 5-29**  
**Form Release Compound**



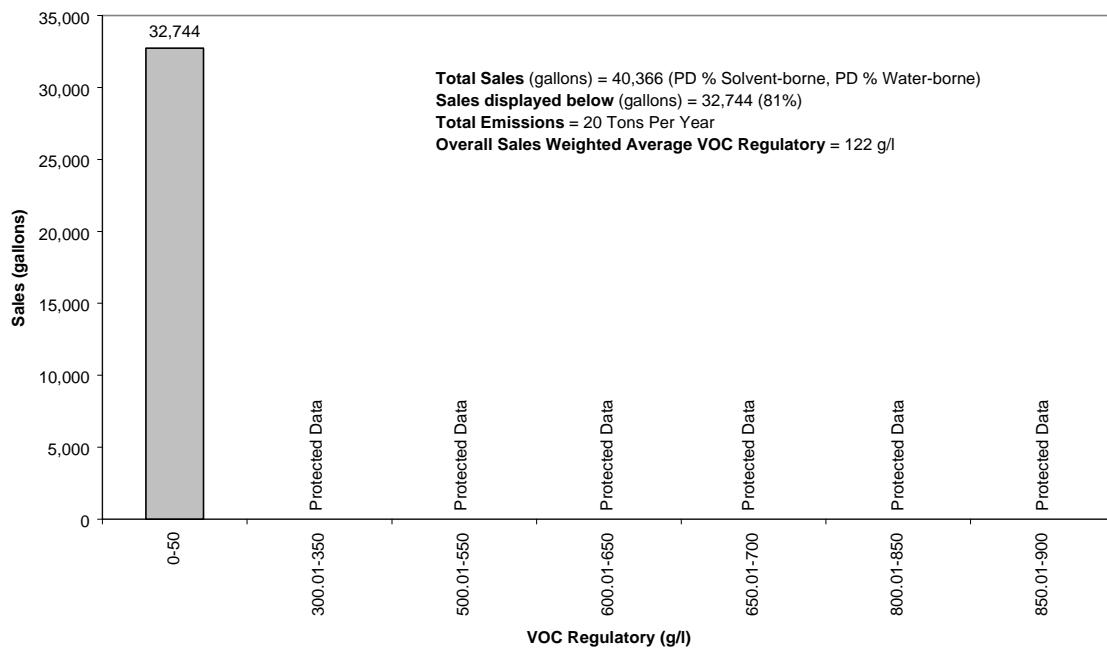
**Figure 5-30**  
**Form Release Compound**



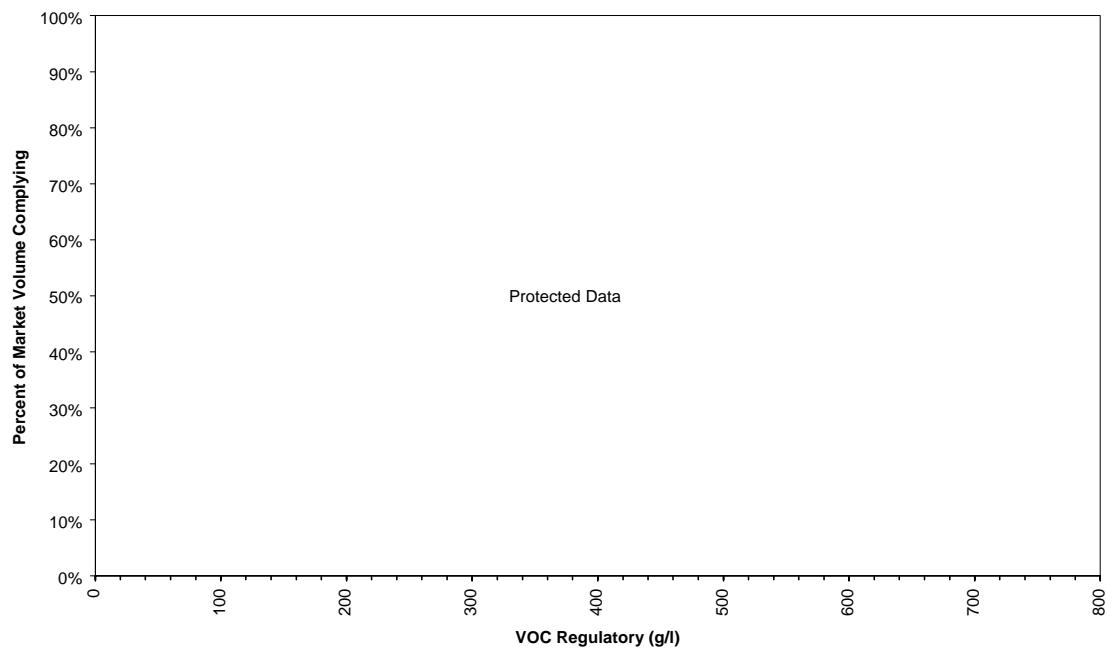
**Figure 5-31**  
**Graphic Art**



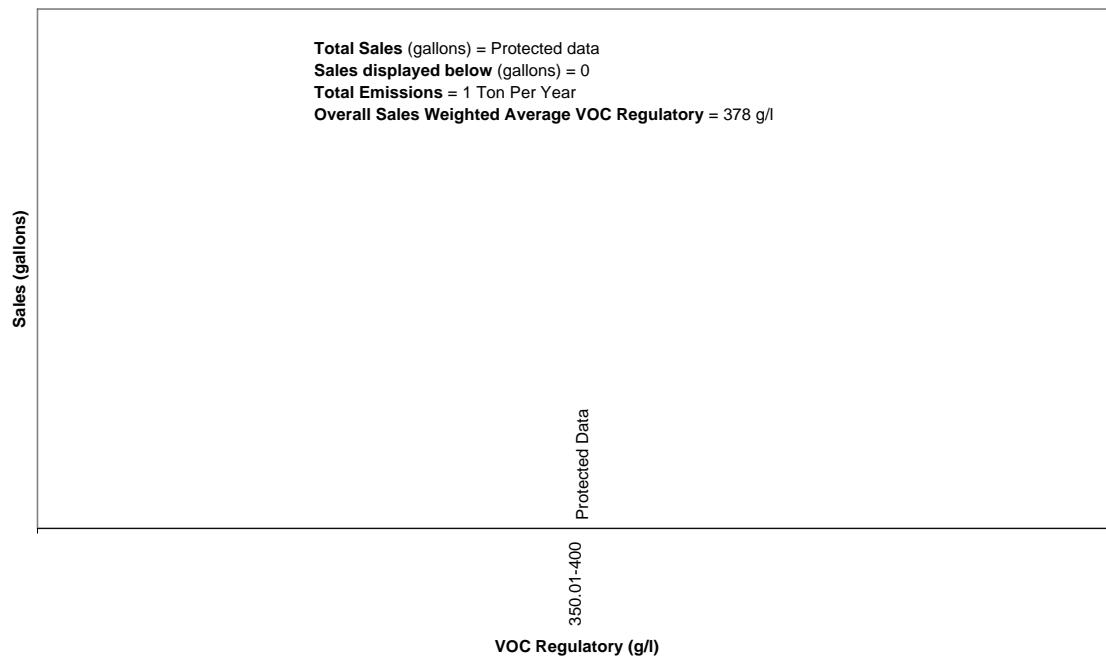
**Figure 5-32**  
**Graphic Art**



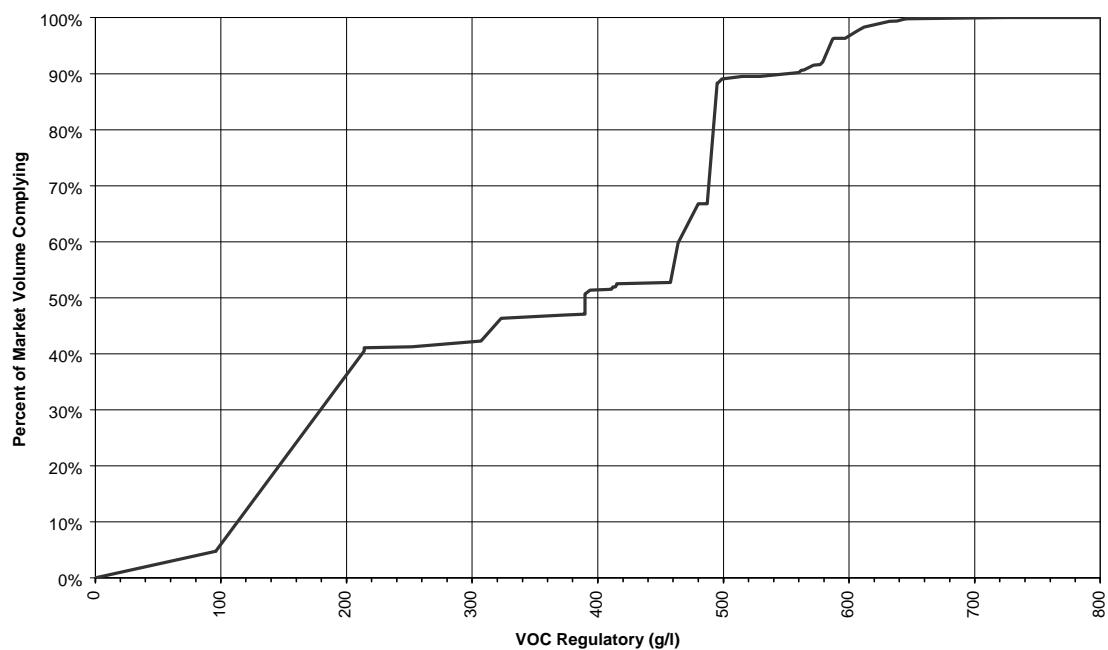
**Figure 5-33**  
**Heat Reactive**



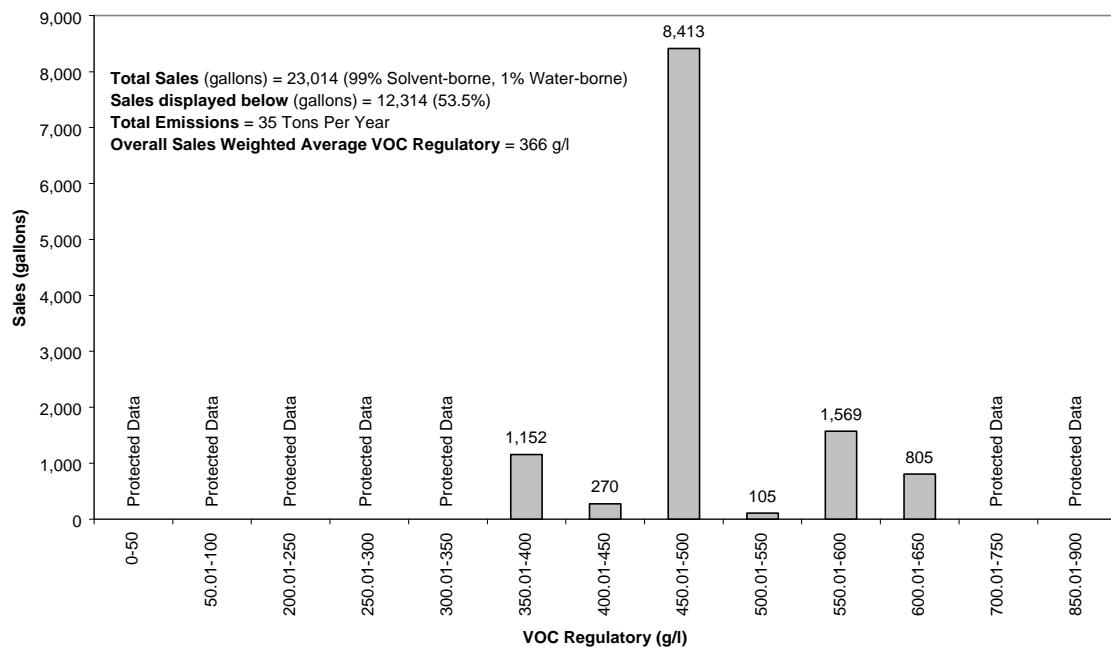
**Figure 5-34**  
**Heat Reactive**



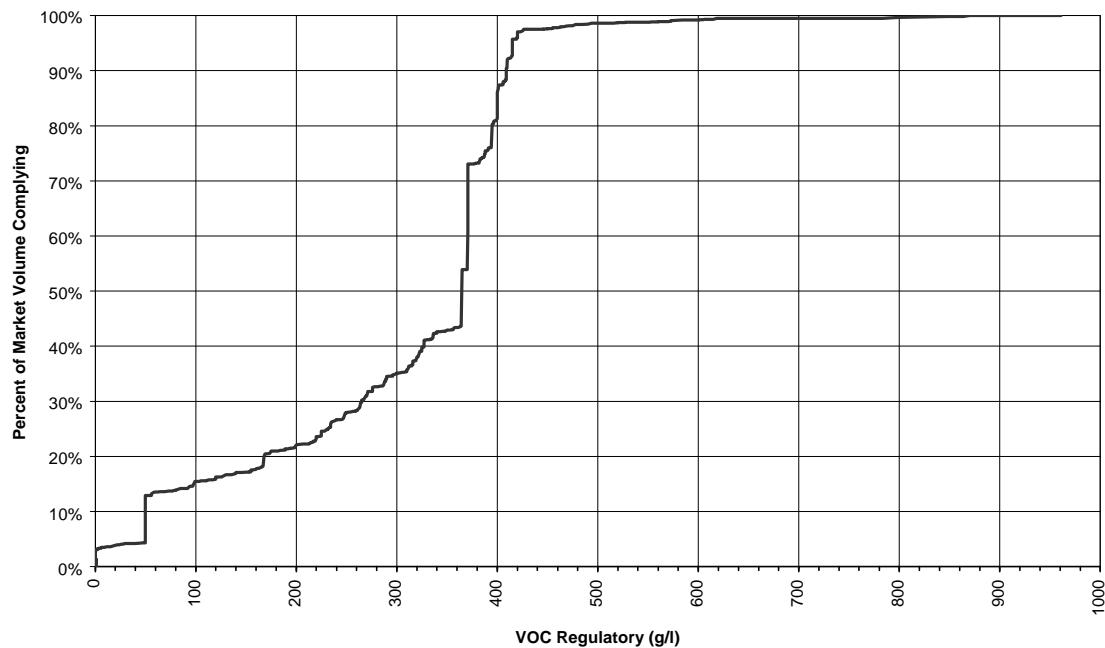
**Figure 5-35**  
**High Temperature**



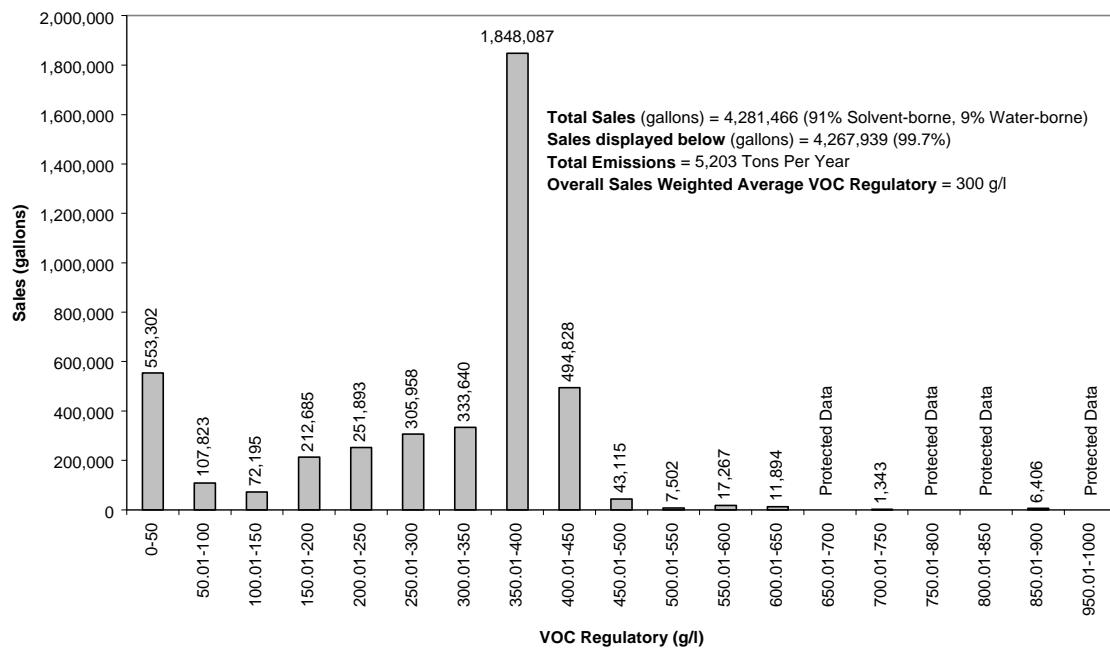
**Figure 5-36**  
**High Temperature**



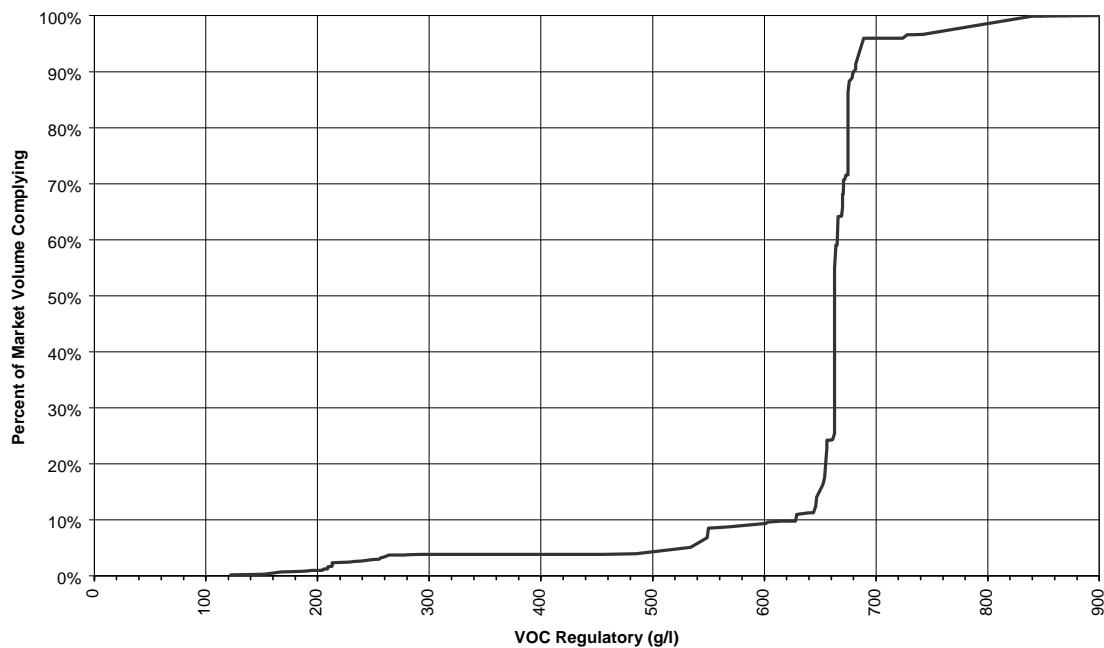
**Figure 5-37**  
**Industrial Maintenance**



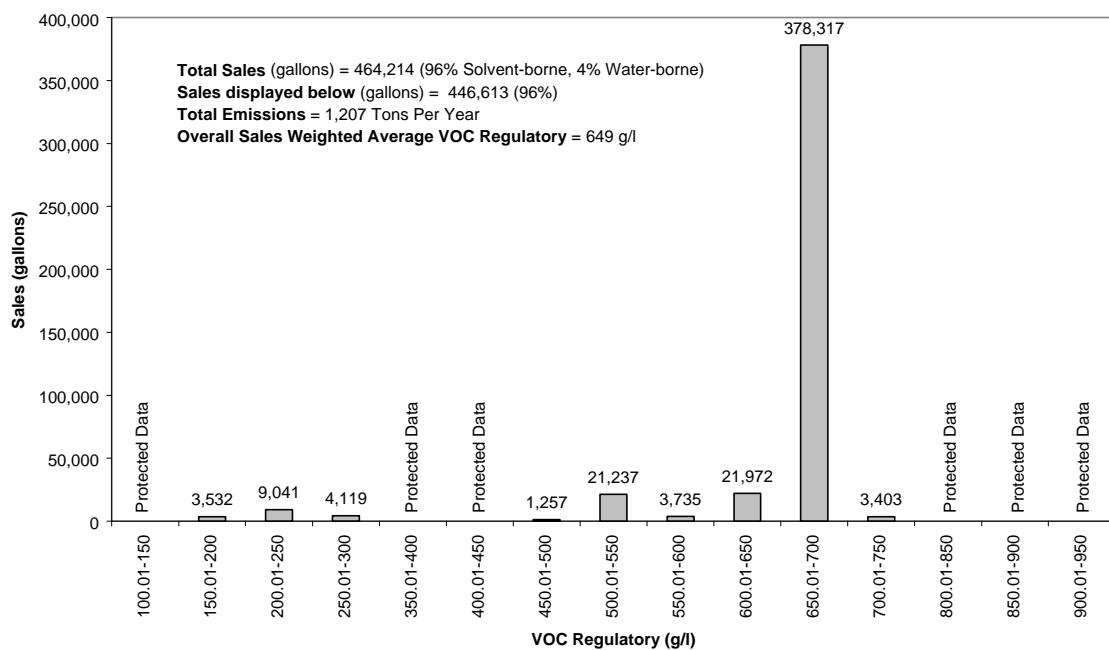
**Figure 5-38**  
**Industrial Maintenance**



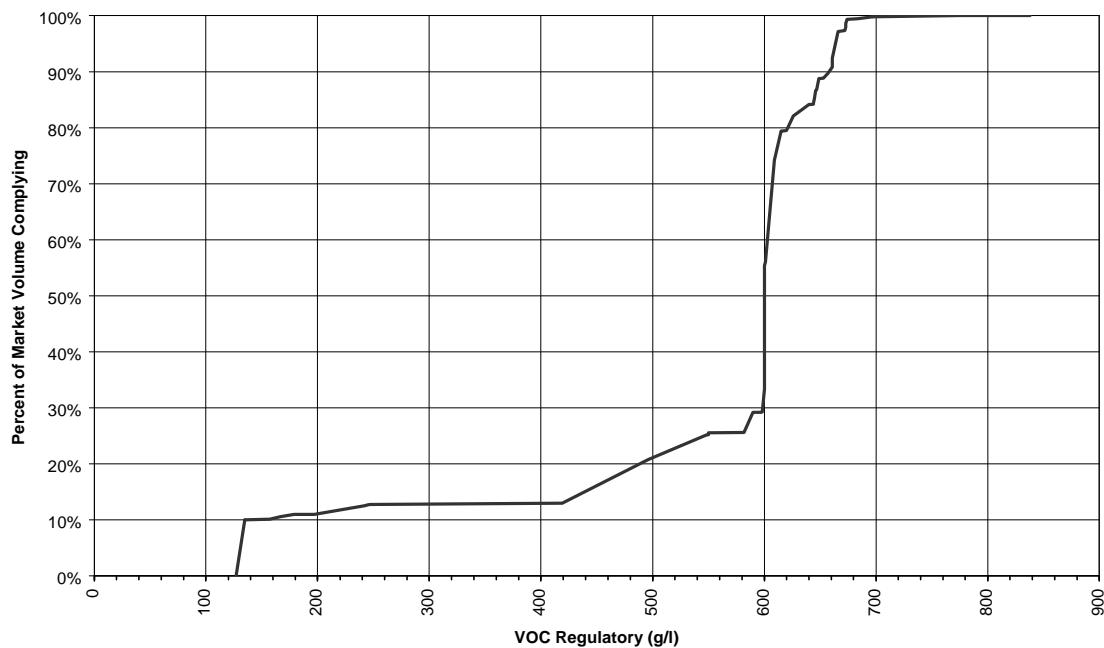
**Figure 5-39**  
Lacquer - Clear



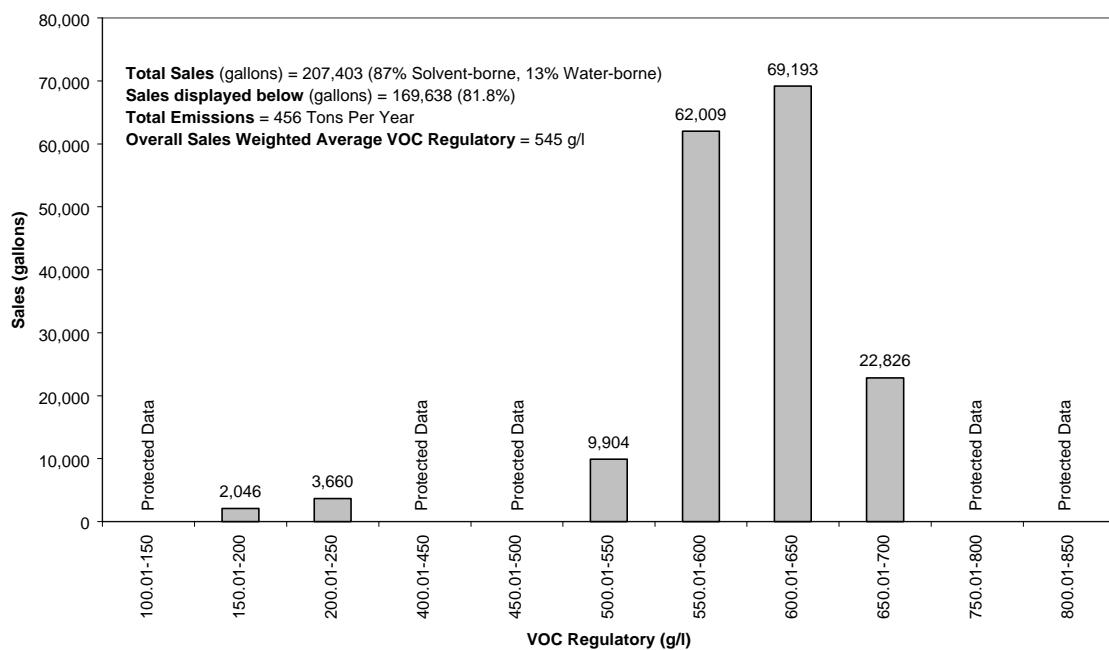
**Figure 5-40**  
Lacquer - Clear



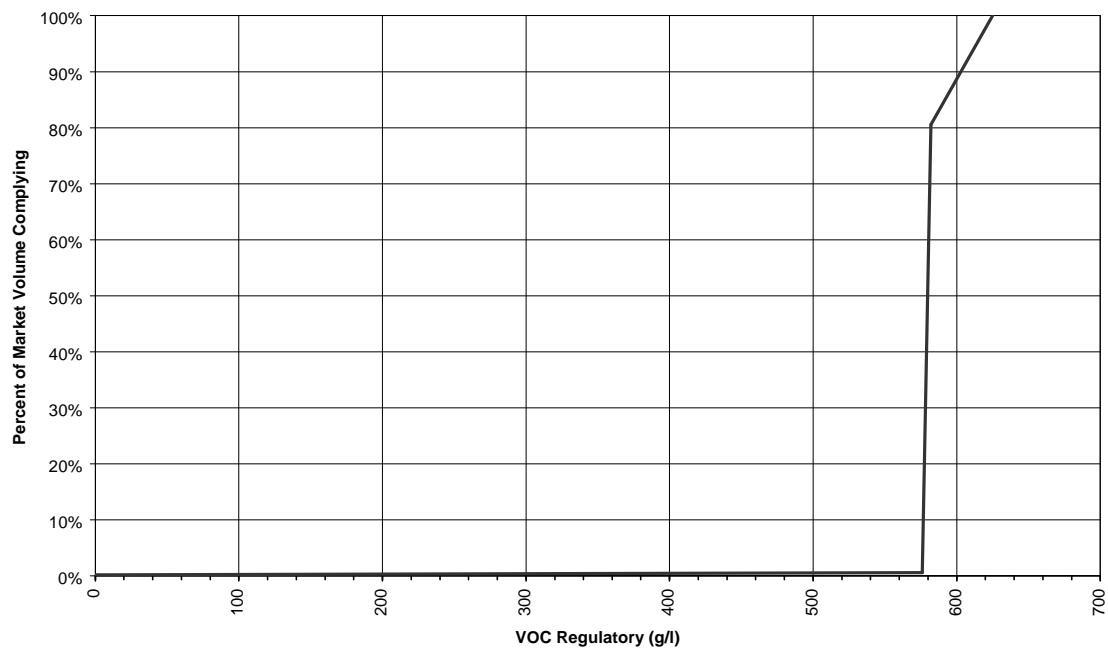
**Figure 5-41**  
**Lacquer - Opaque**



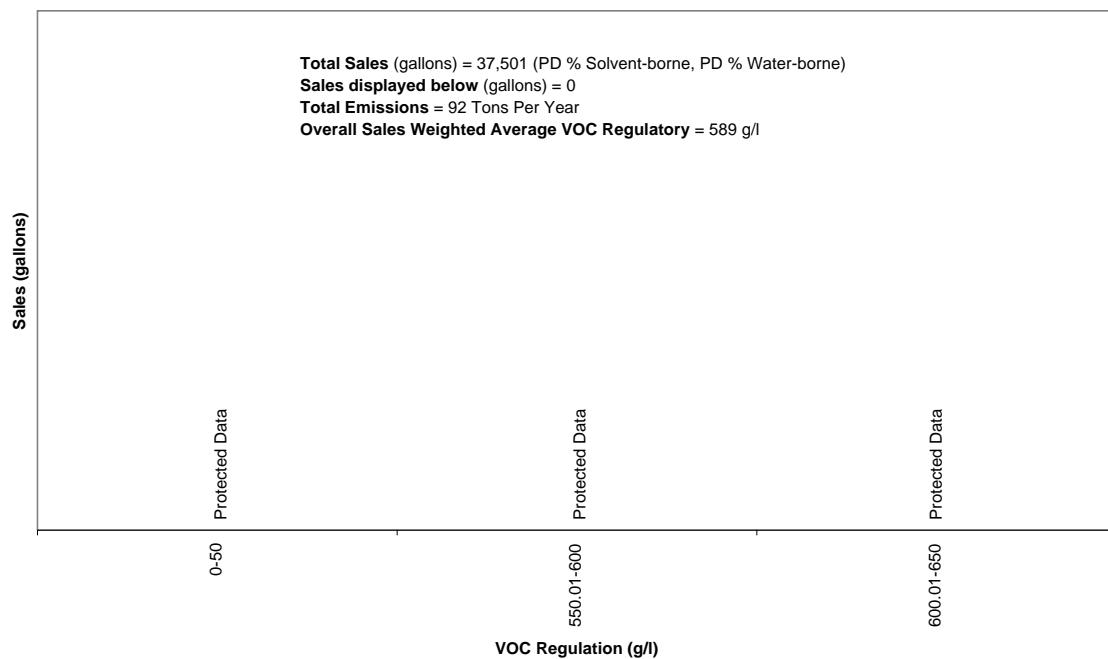
**Figure 5-42**  
**Lacquer - Opaque**



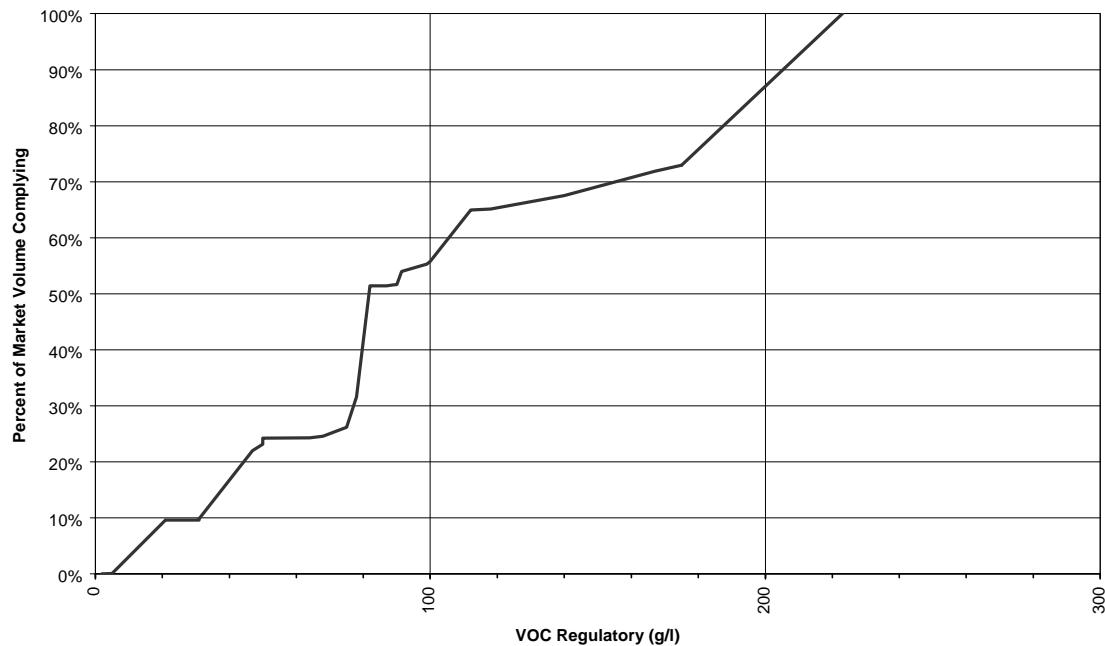
**Figure 5-43**  
**Magnesite Cement**



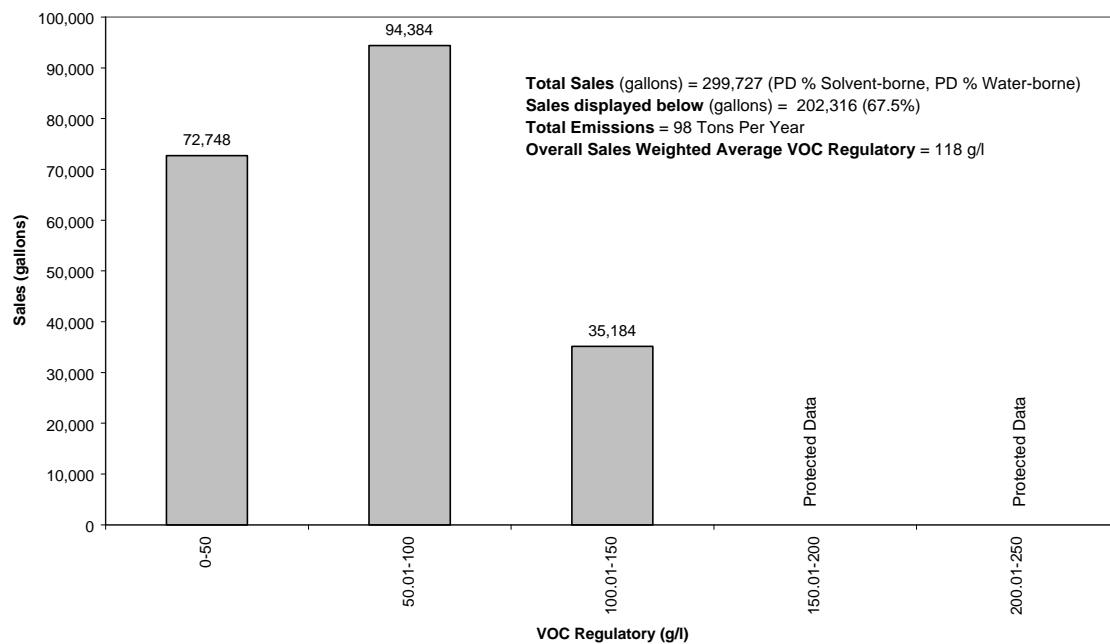
**Figure 5-44**  
**Magnesite Cement**



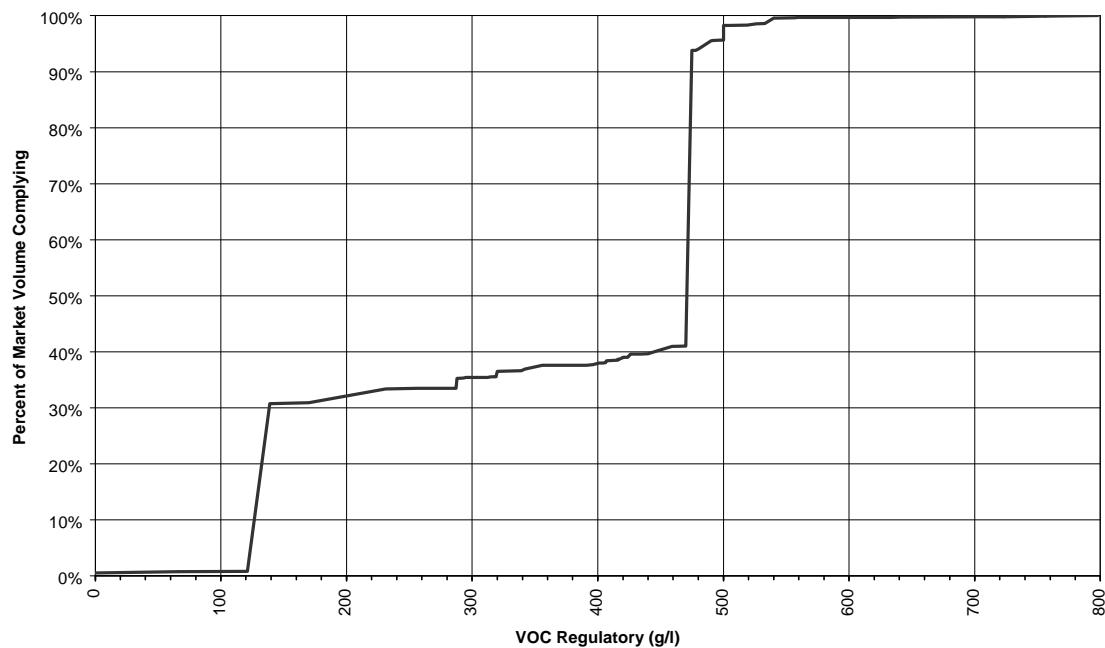
**Figure 5-45**  
**Mastic Texture**



**Figure 5-46**  
**Mastic Texture**



**Figure 5-47**  
**Metallic Pigmented**



**Figure 5-48**  
**Metallic Pigmented**

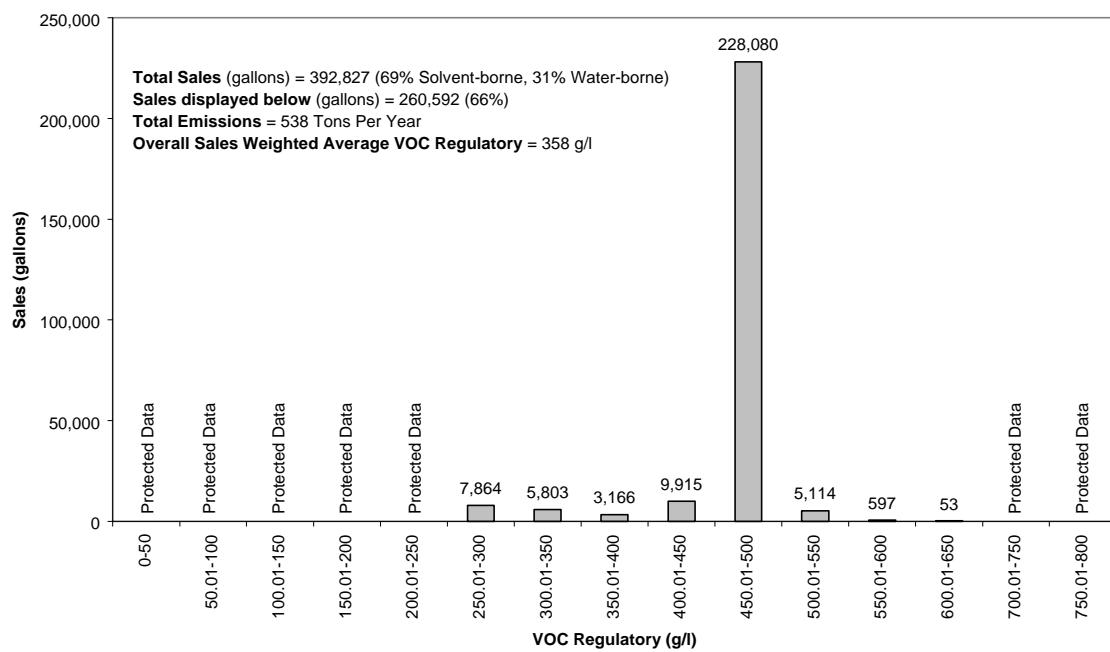


Figure 5-49  
Multi-Color

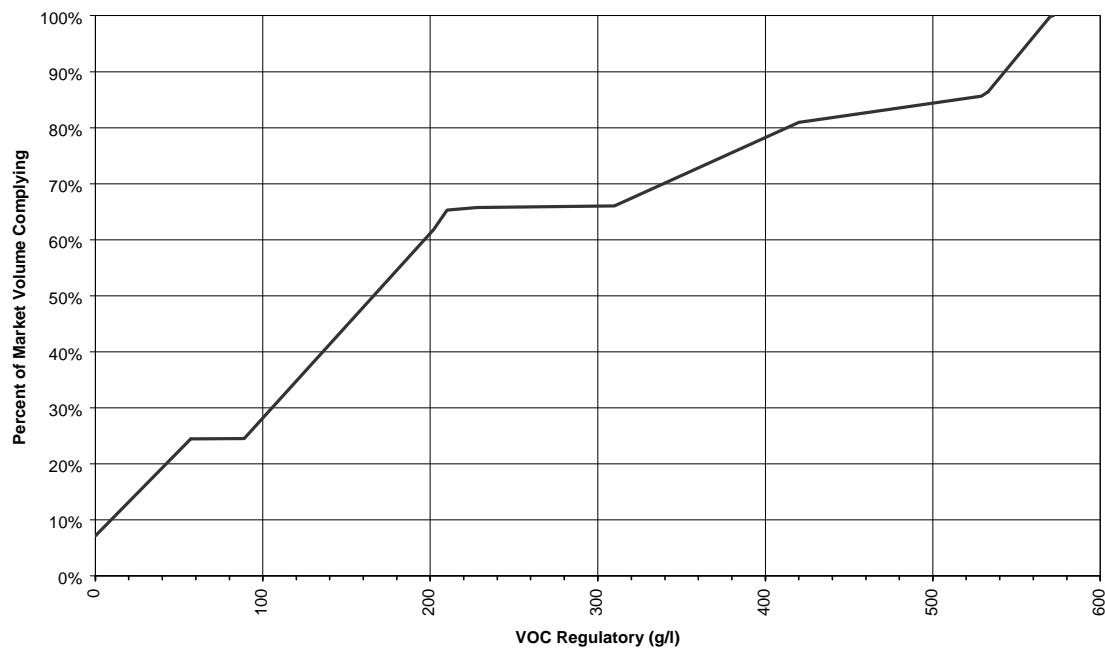
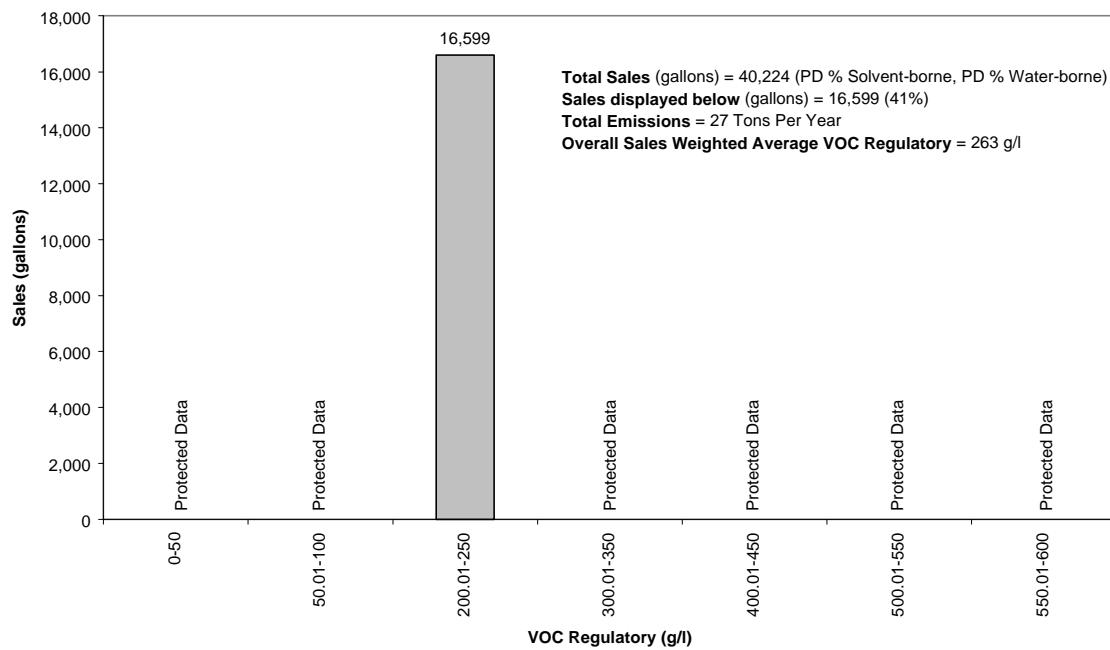
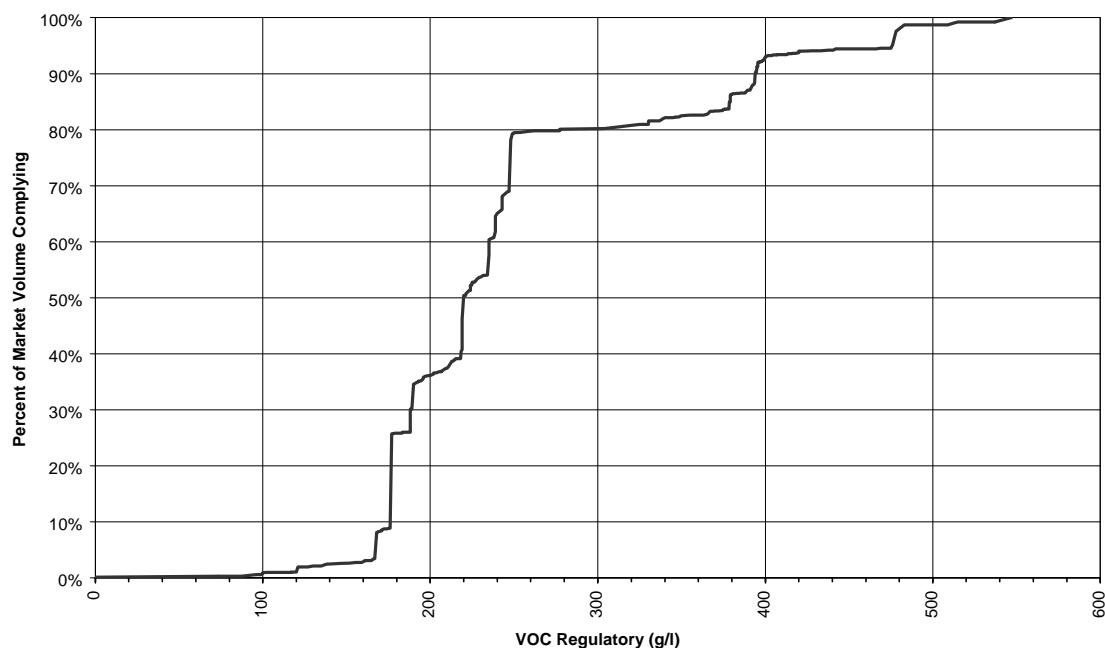


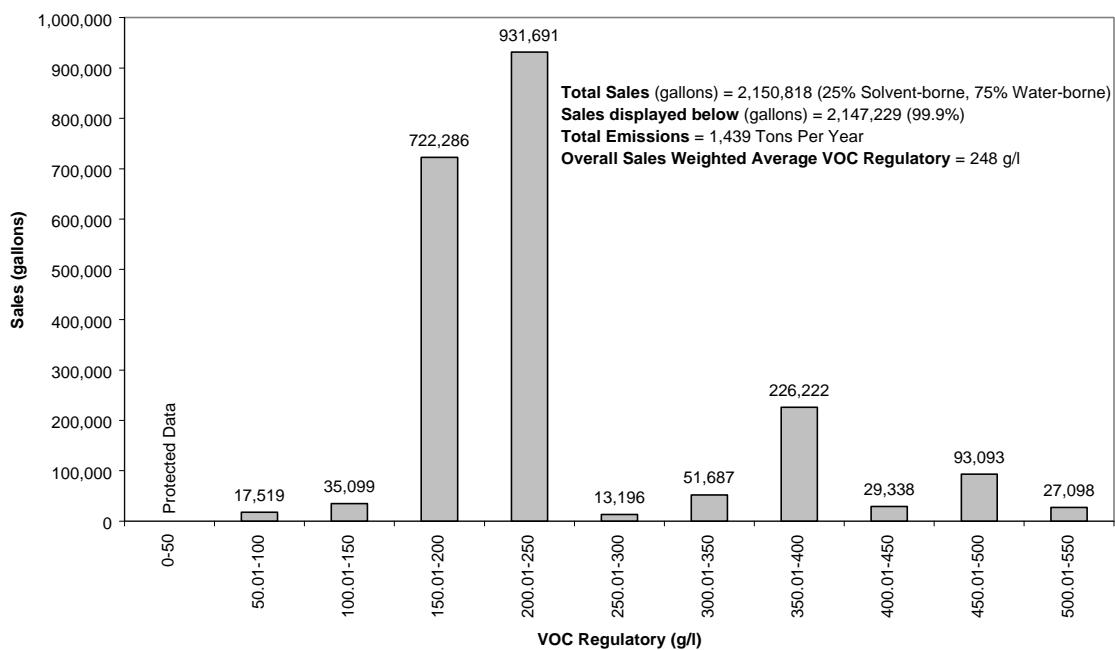
Figure 5-50  
Multi-Color



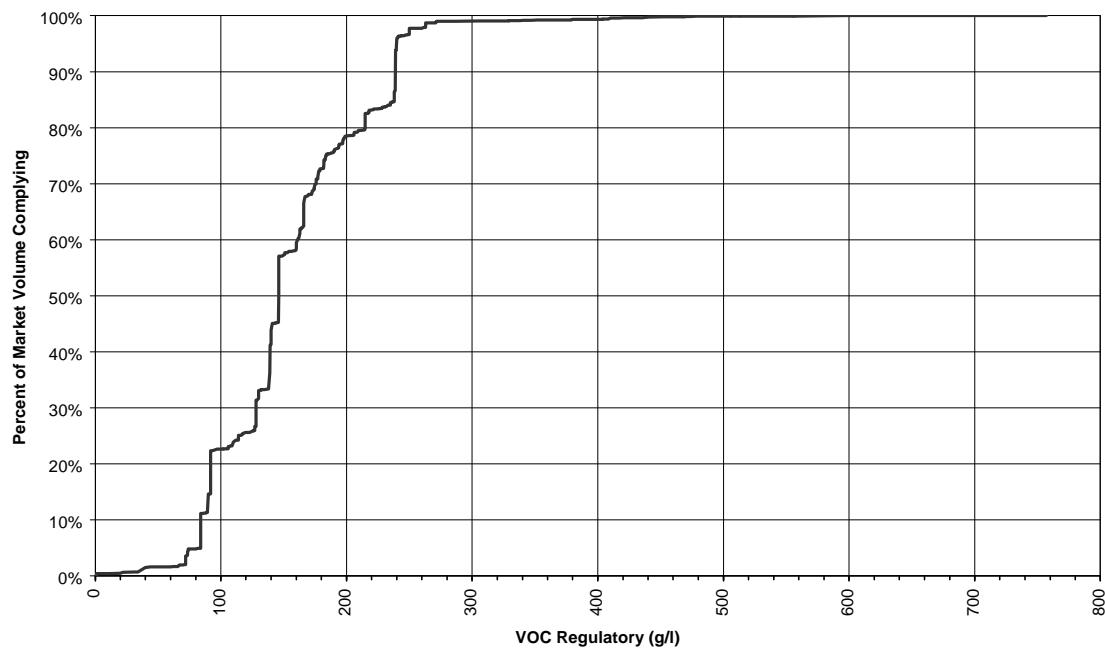
**Figure 5-51**  
**Nonflat - High Gloss**



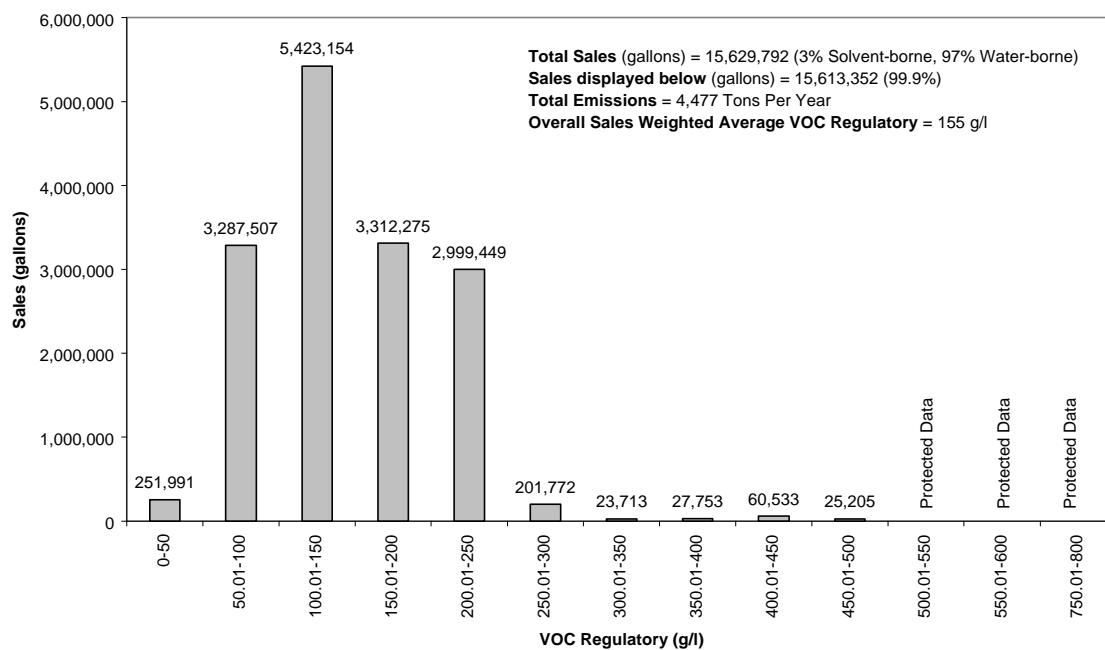
**Figure 5-52**  
**Nonflat - High Gloss**



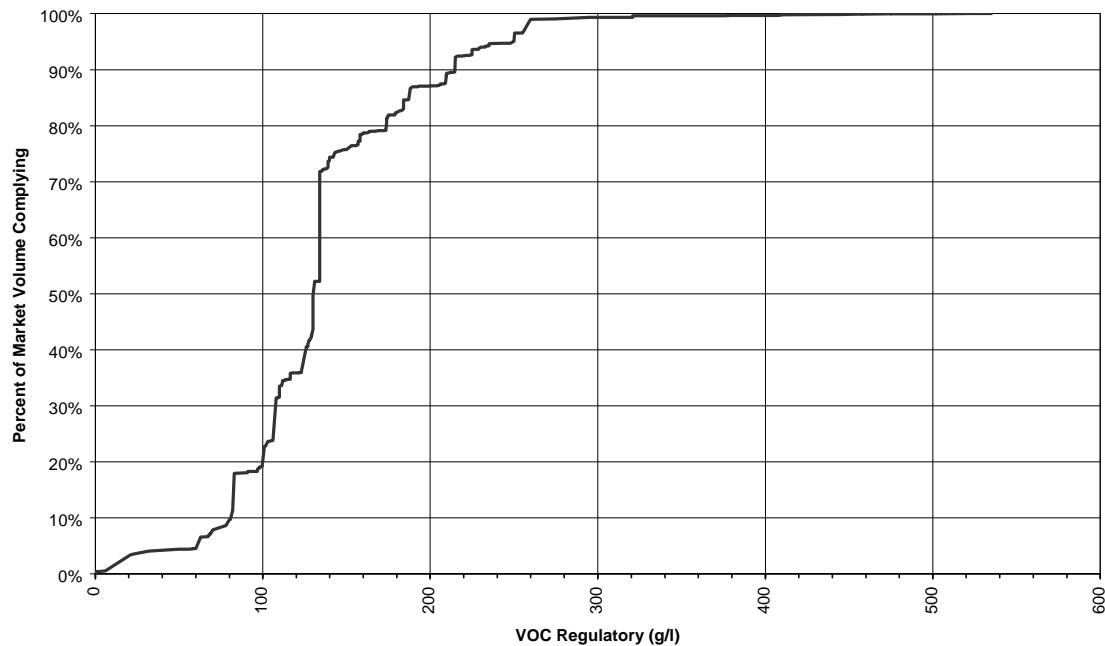
**Figure 5-53**  
**Nonflat - Medium Gloss**



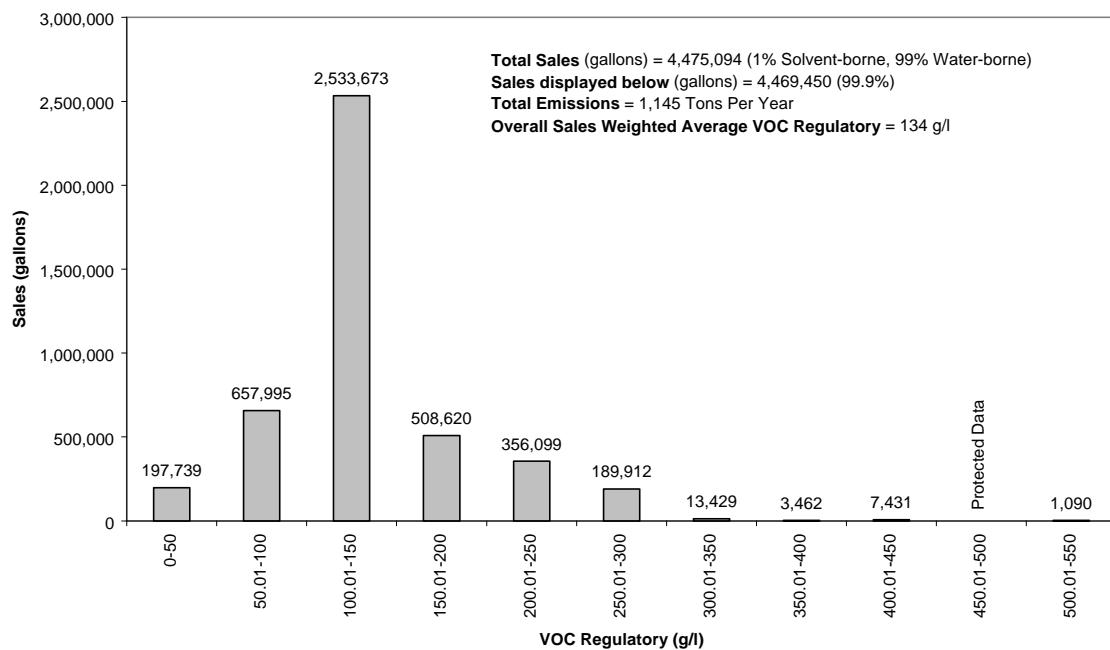
**Figure 5-54**  
**Nonflat - Medium Gloss**



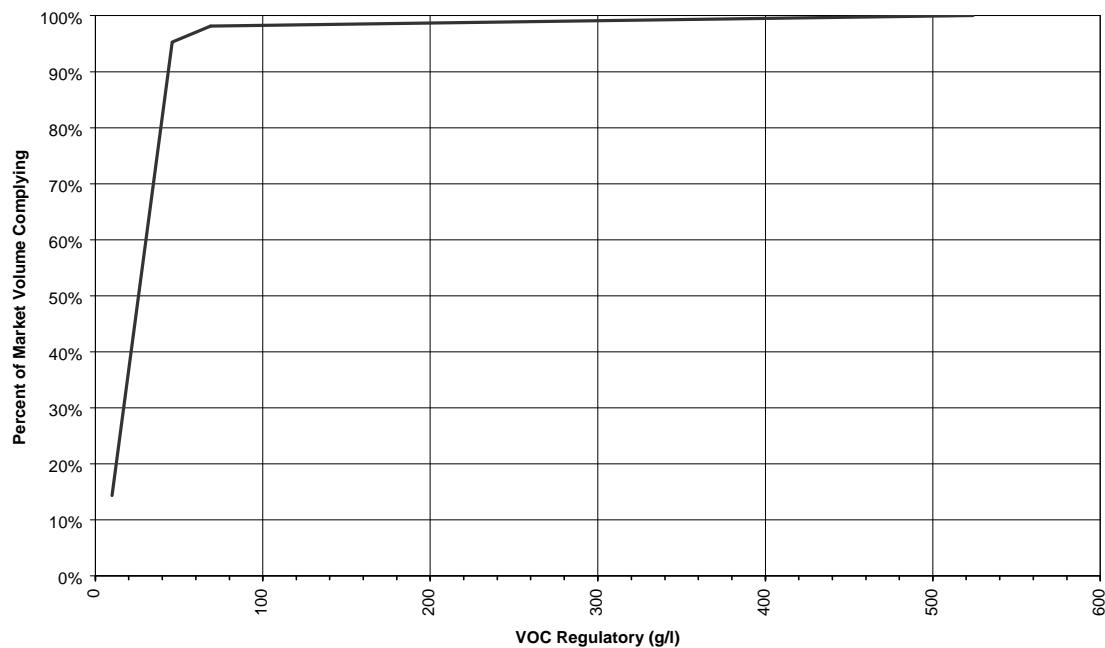
**Figure 5-55**  
**Nonflat - Low Gloss**



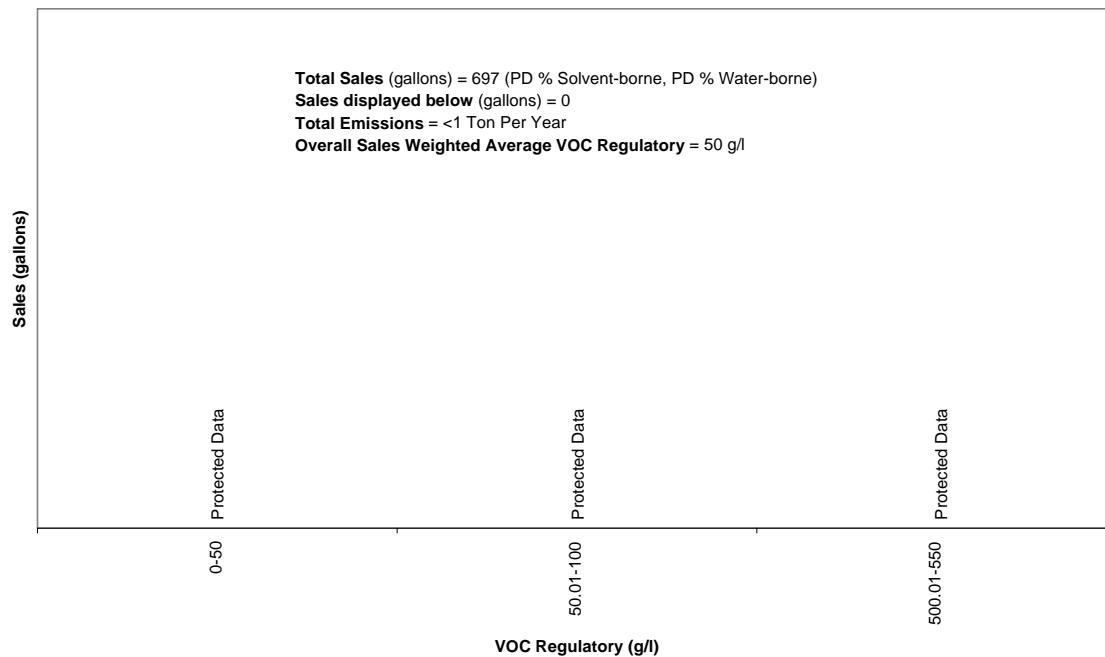
**Figure 5-56**  
**Nonflat - Low Gloss**



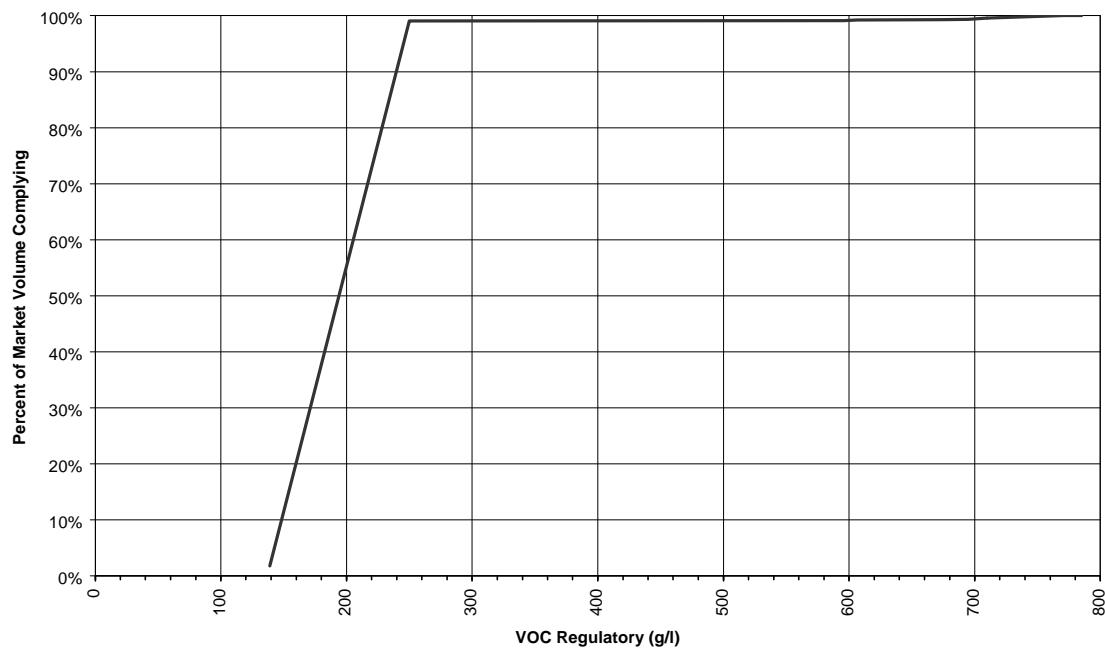
**Figure 5-57**  
**Nuclear**



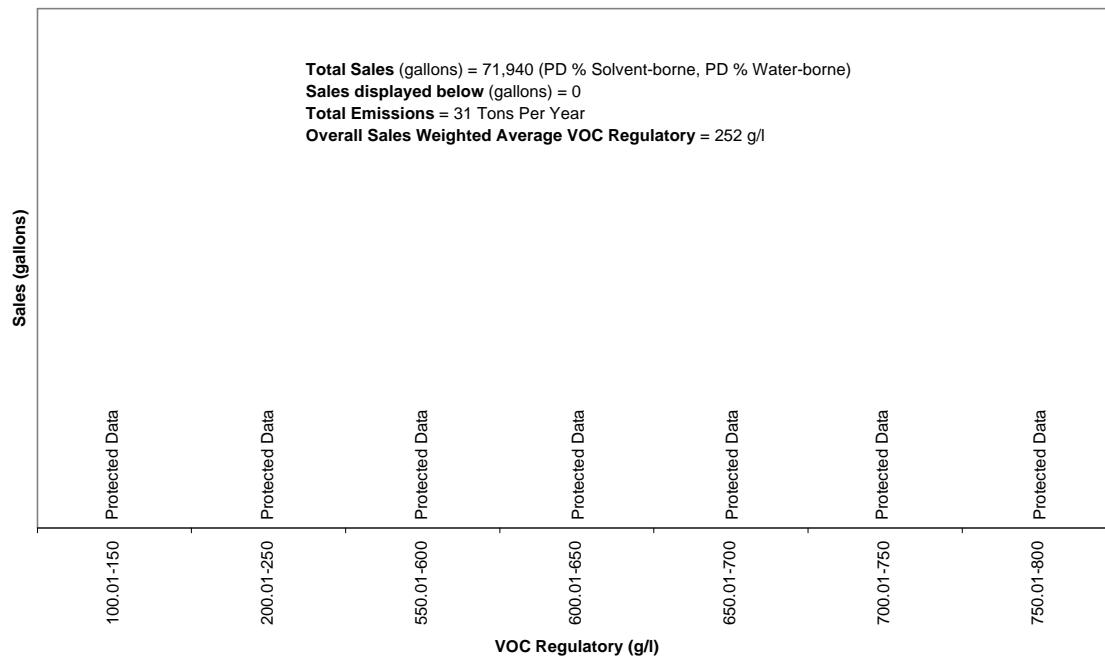
**Figure 5-58**  
**Nuclear**



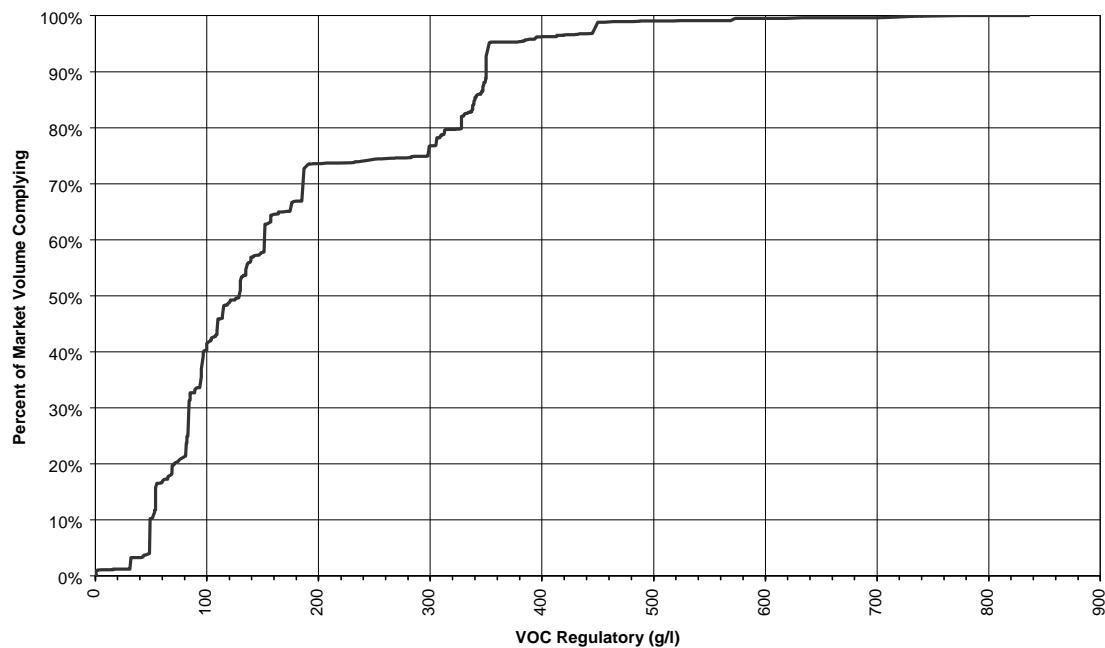
**Figure 5-59**  
**Pre-Treatment Wash Primer**



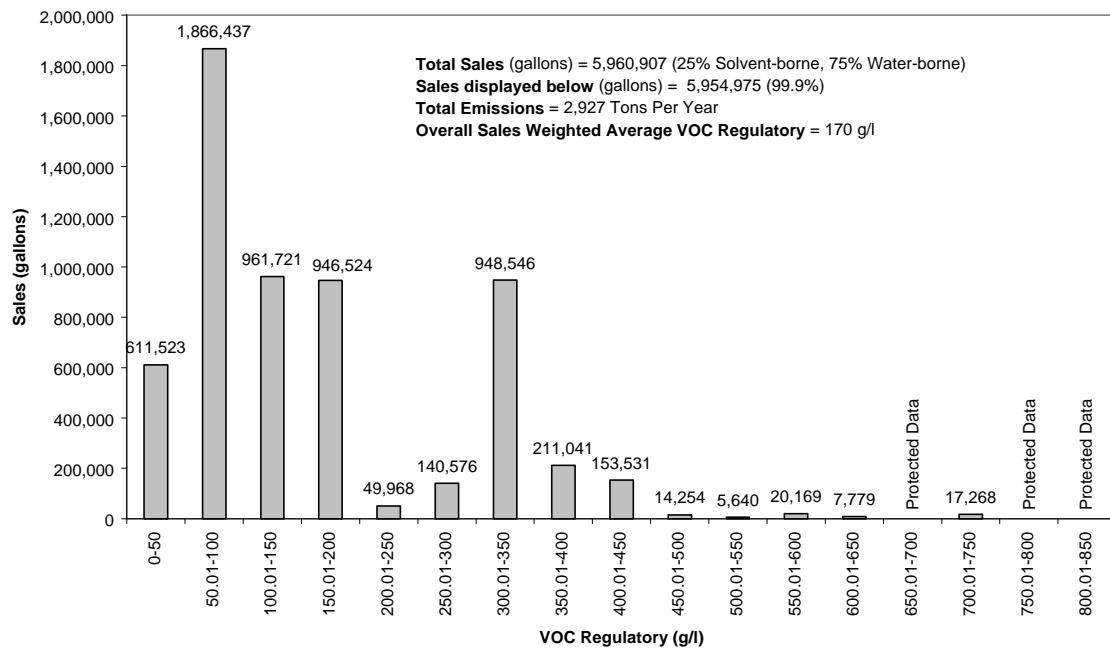
**Figure 5-60**  
**Pre-Treatment Wash Primer**



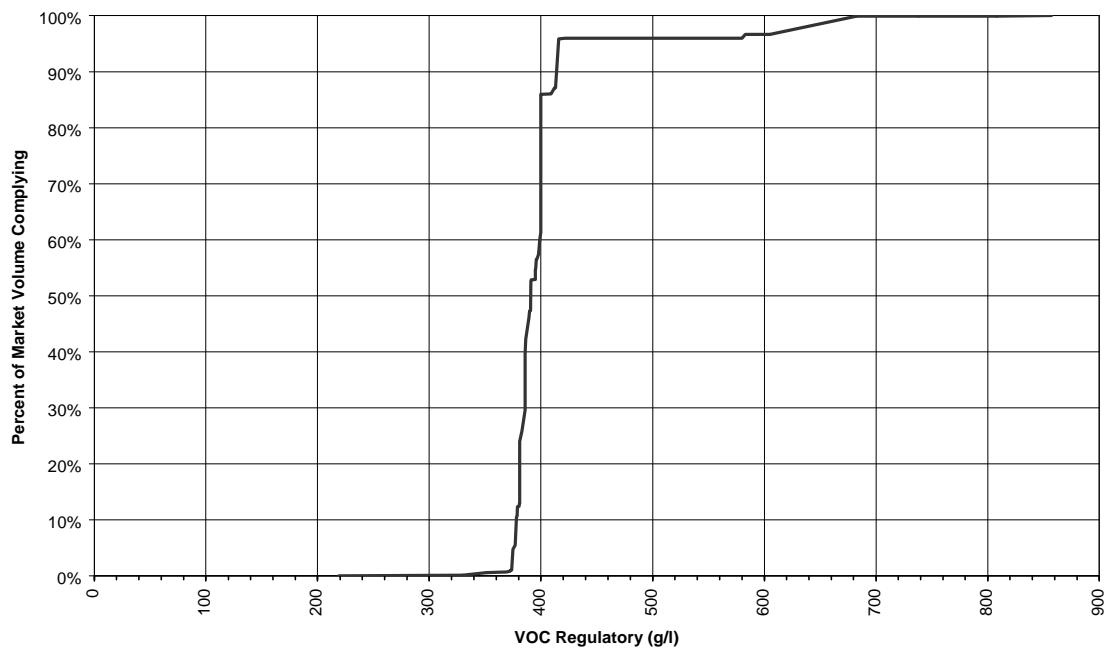
**Figure 5-61**  
**Primer, Sealer, Undercoater**



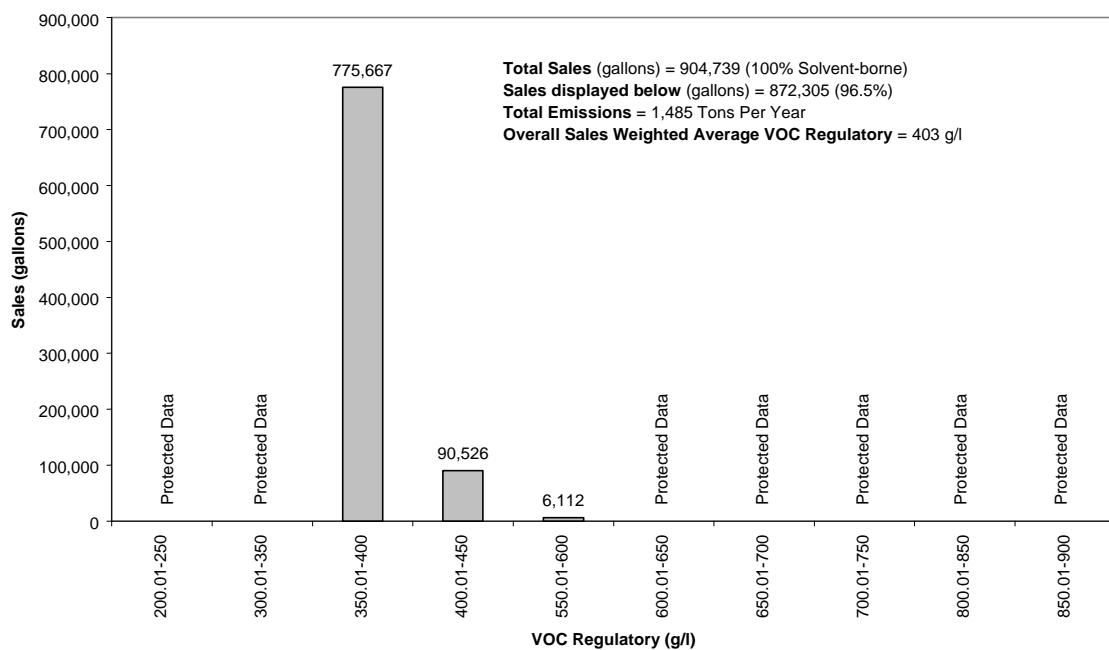
**Figure 5-62**  
**Primer, Sealer, & Undercoater**



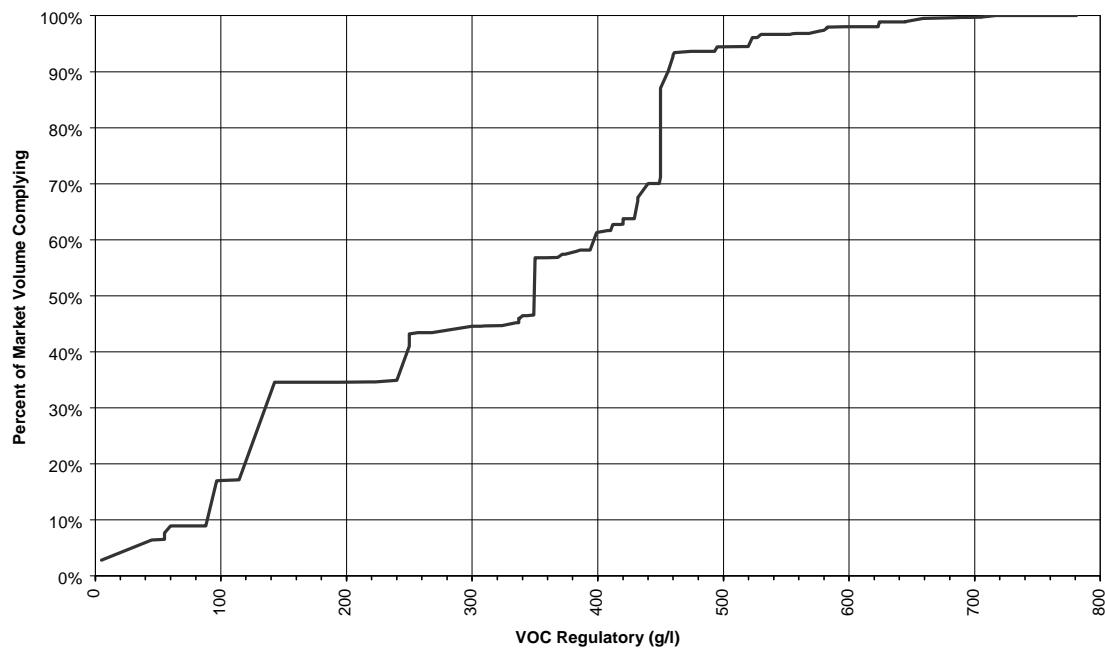
**Figure 5-63**  
**Quick Dry Enamel**



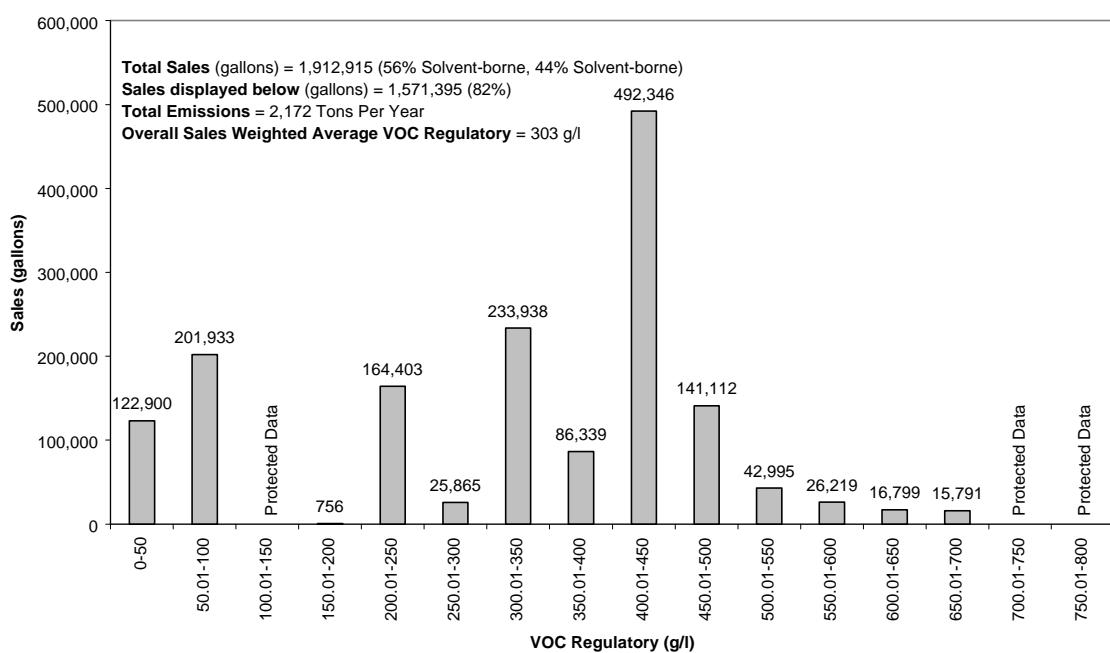
**Figure 5-64**  
**Quick Dry Enamel**



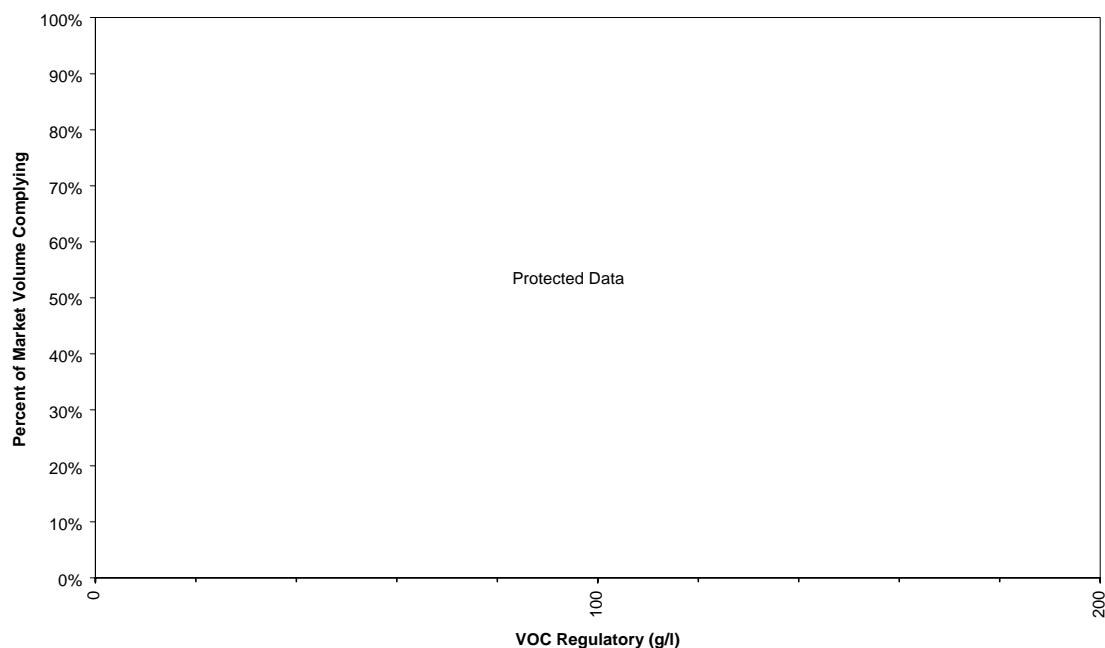
**Figure 5-65**  
**Quick Dry Primer, Sealer, Undercoater**



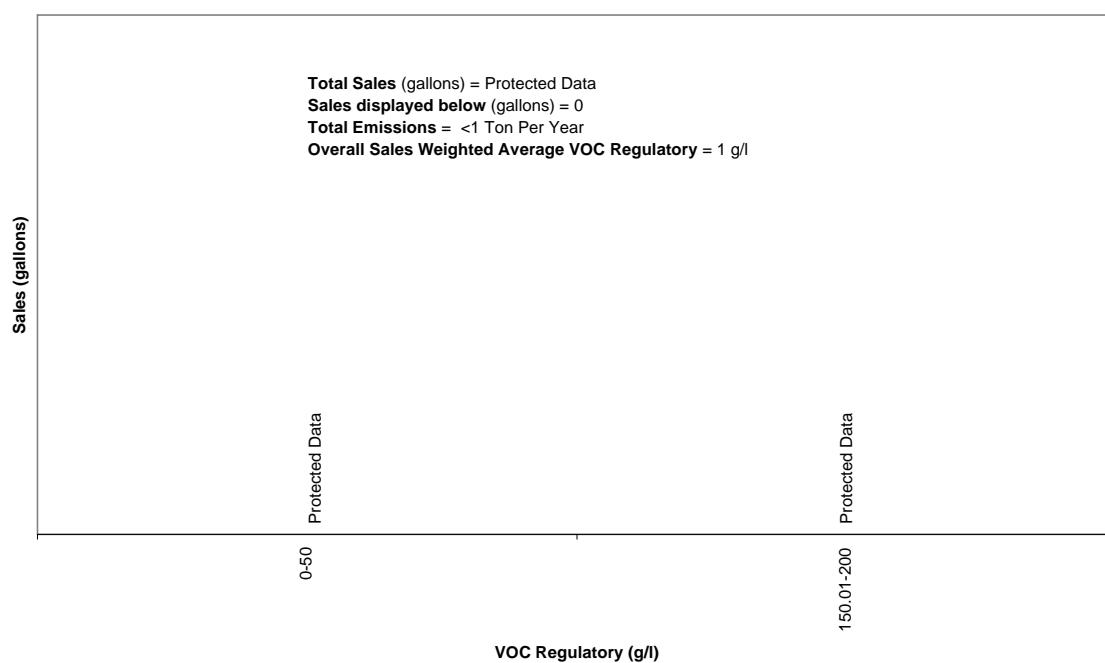
**Figure 5-66**  
**Quickdry Primer, Sealer, & Undercoater**



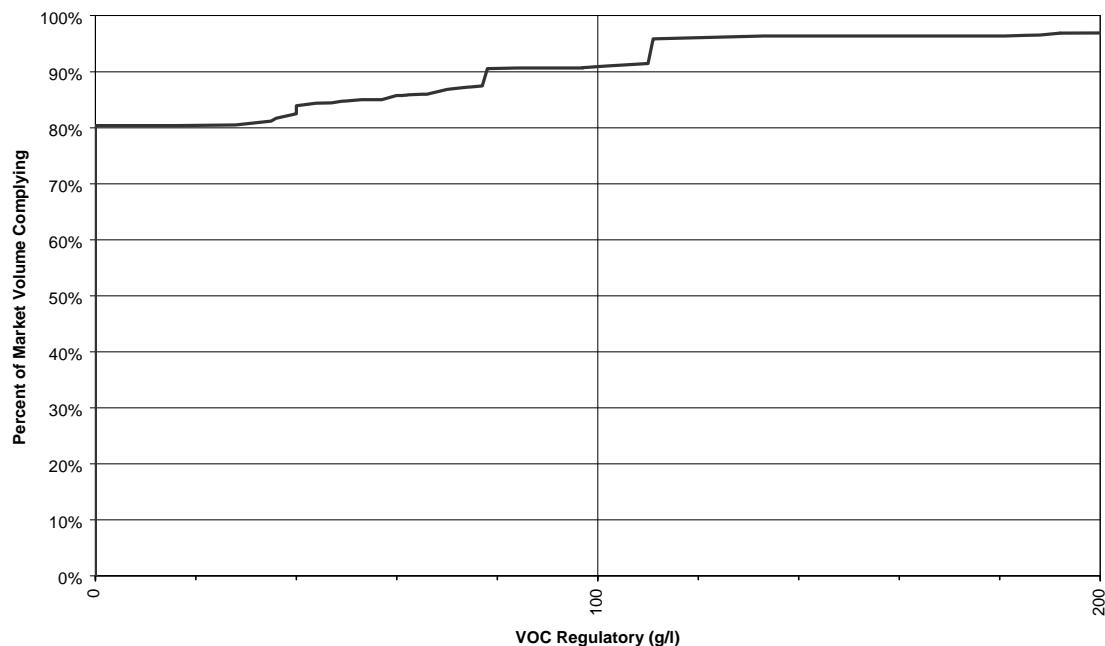
**Figure 5-67**  
**Repair & Maintenance Thermoplastic**



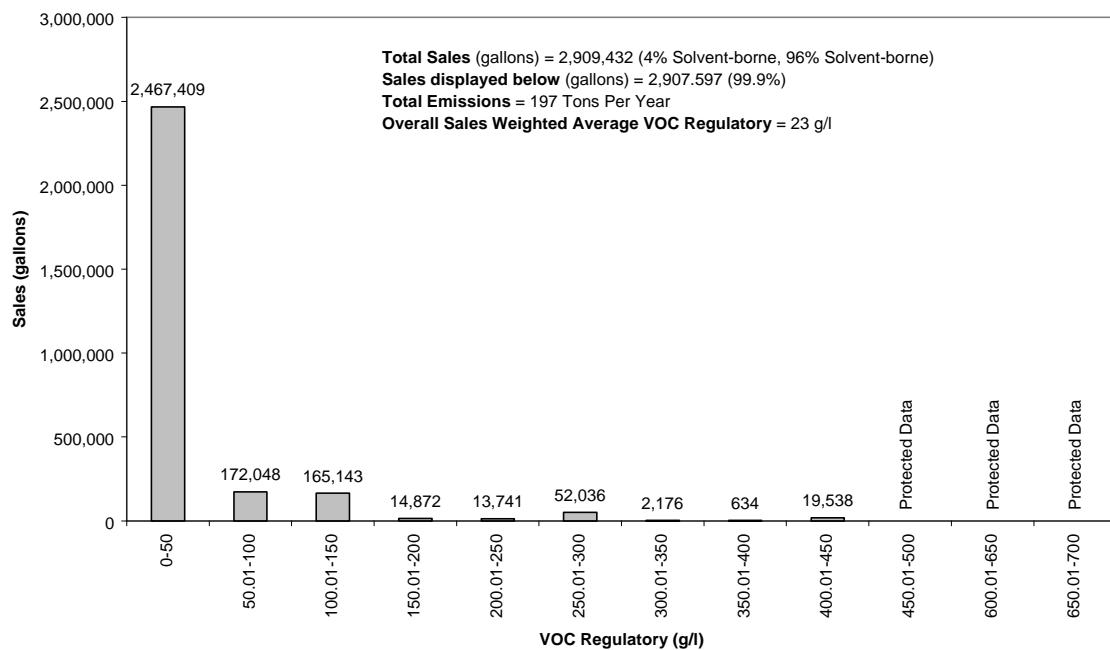
**Figure 5-68**  
**Repair & Maintenance Thermoplastic**



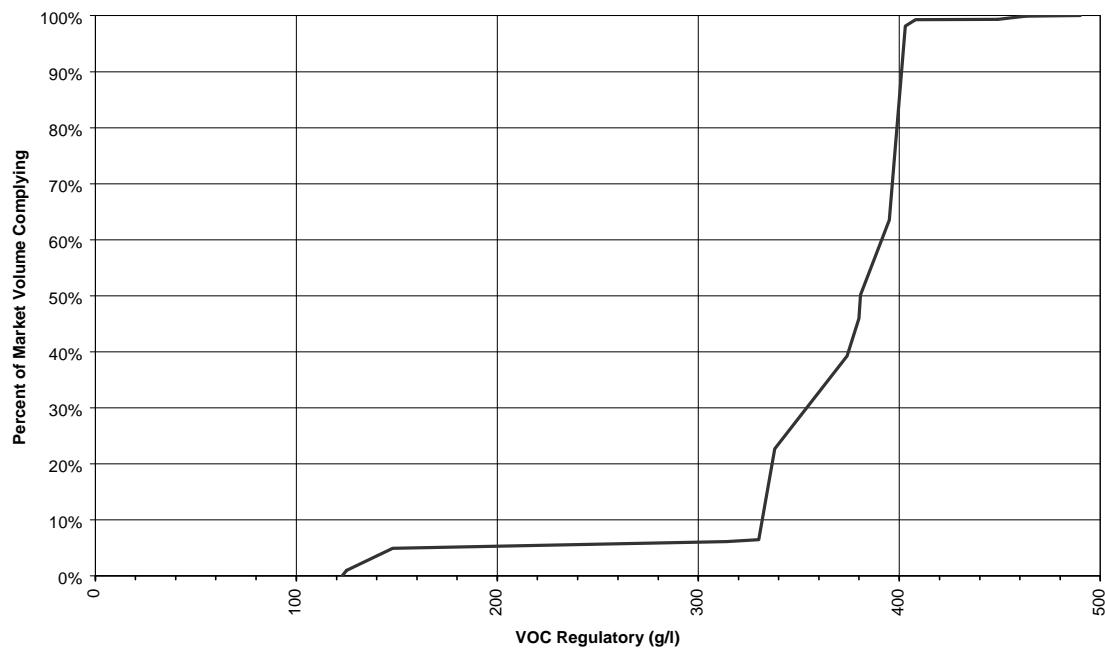
**Figure 5-69**  
**Roof**



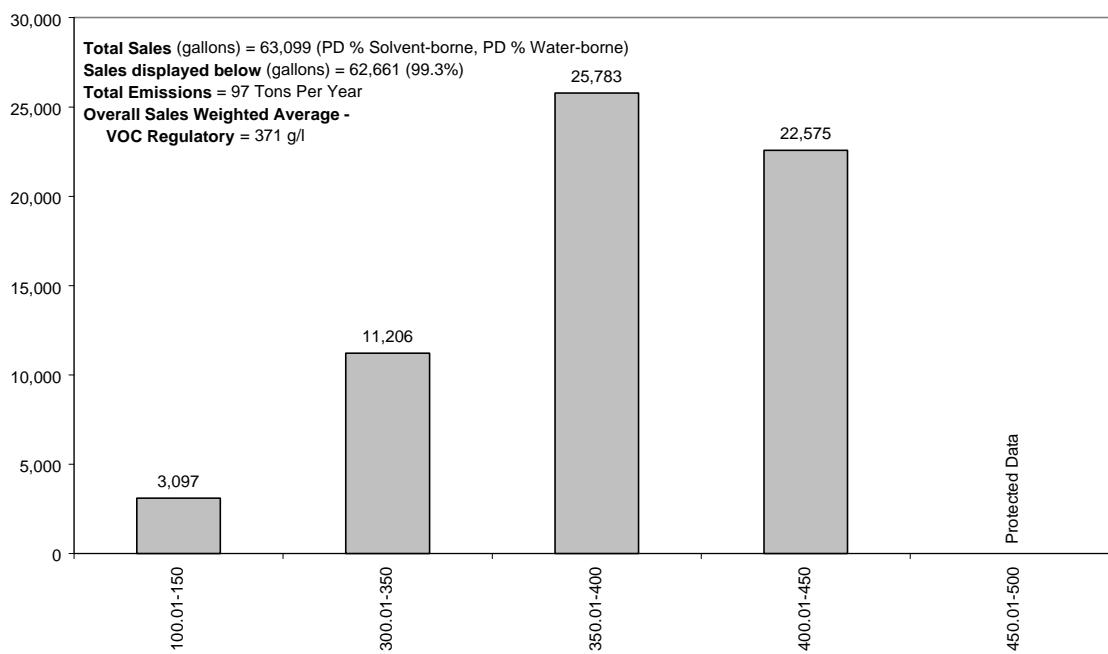
**Figure 5-70**  
**Roof**



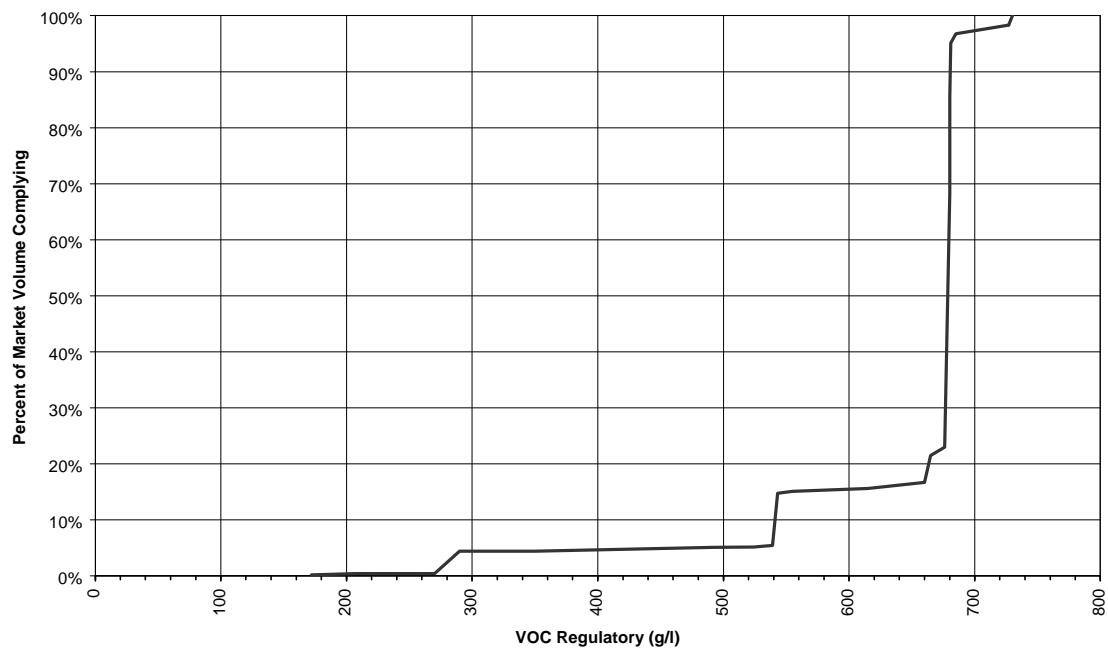
**Figure 5-71**  
**Rust Preventative**



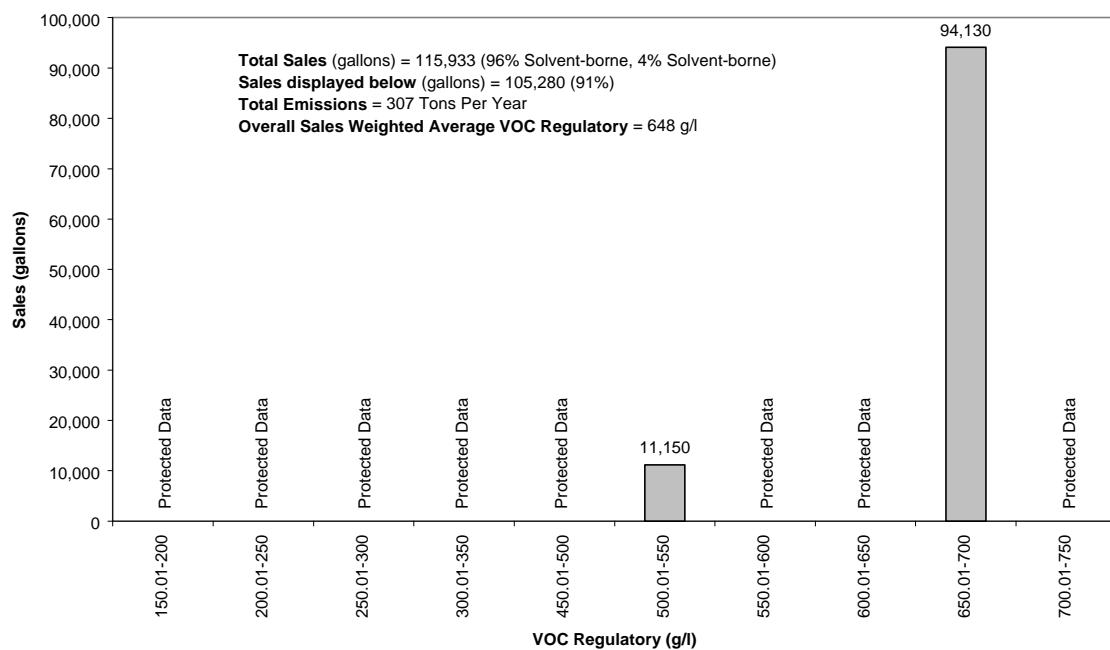
**Figure 5-72**  
**Rust Preventative**



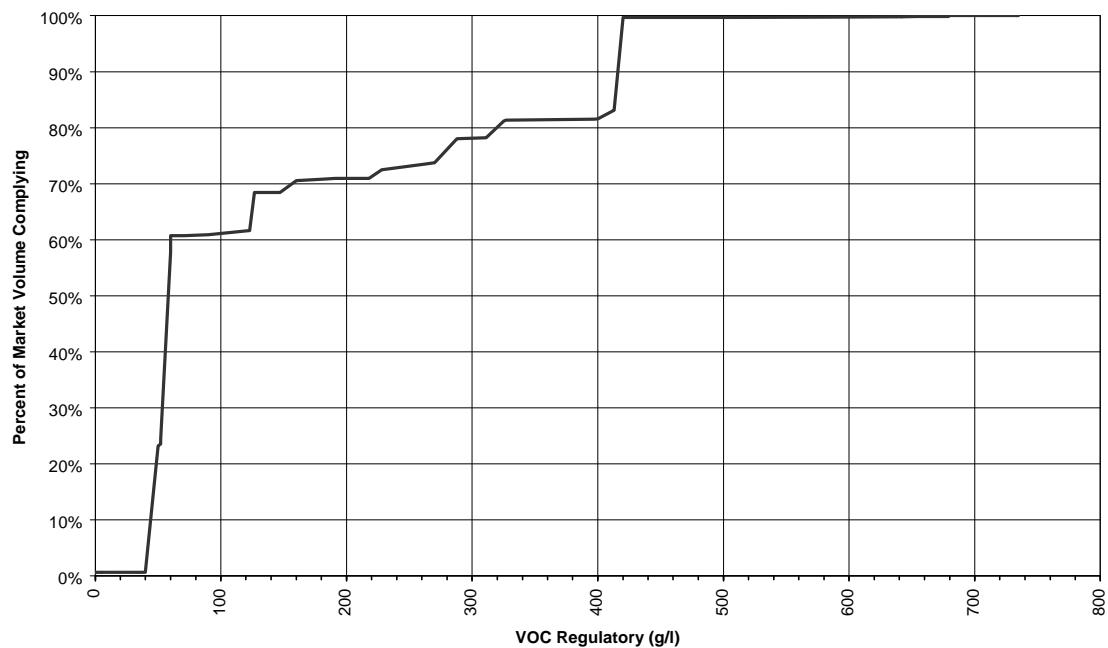
**Figure 5-73**  
**Sanding Sealer**



**Figure 5-74**  
**Sanding Sealer**



**Figure 5-75**  
**Sealer**



**Figure 5-76**  
**Sealer**

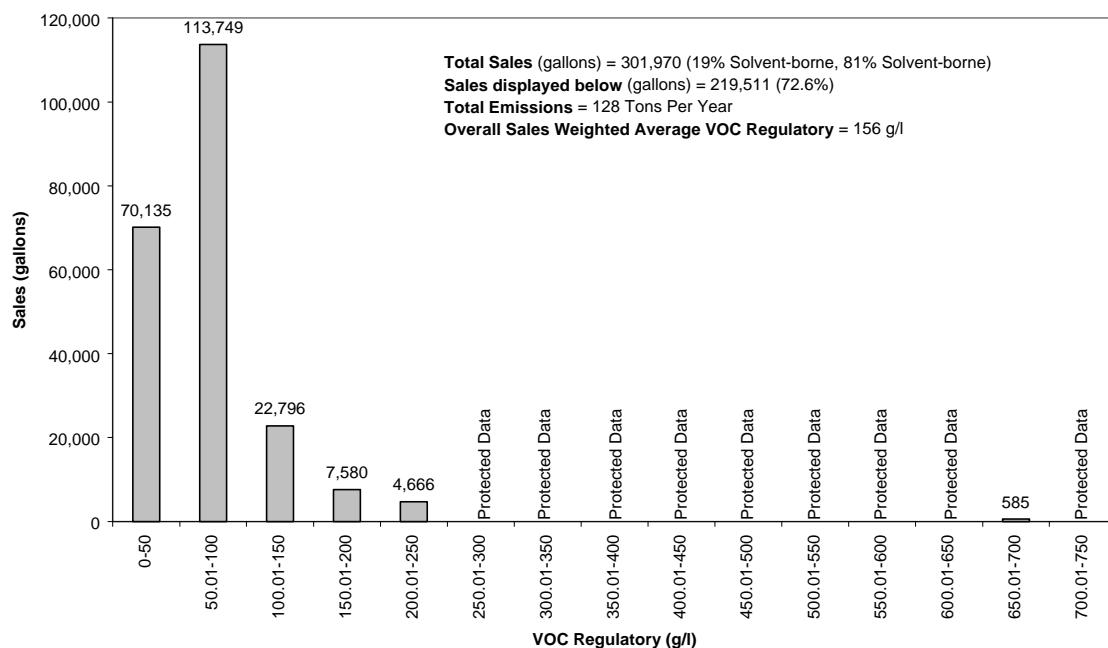


Figure 5-77  
Shellac - Clear

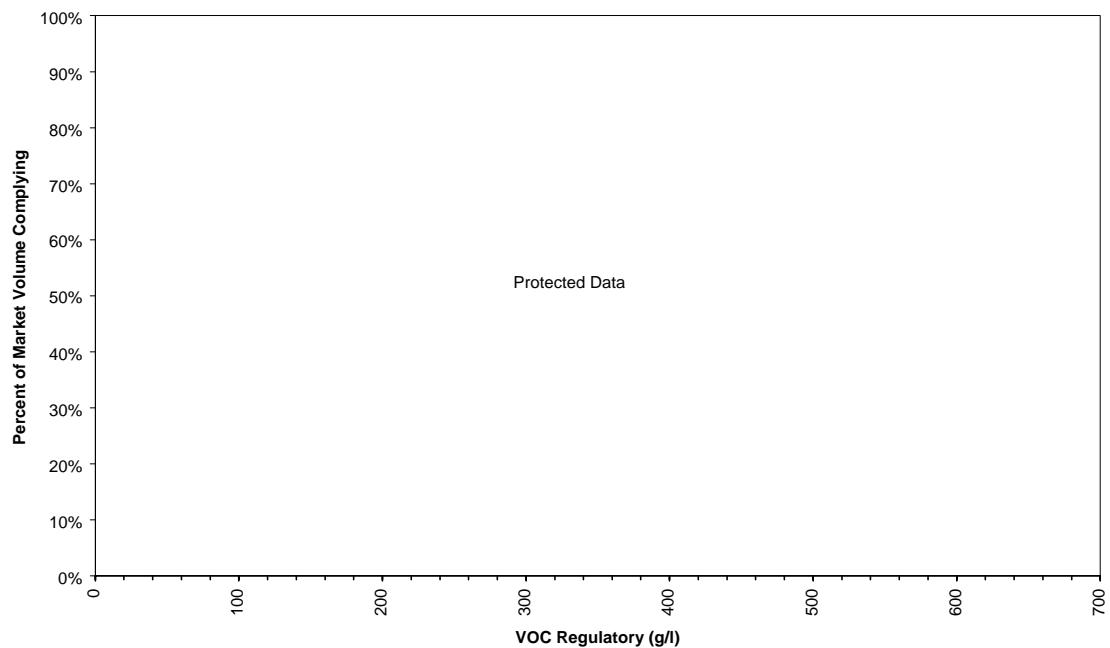


Figure 5-78  
Shellac - Clear

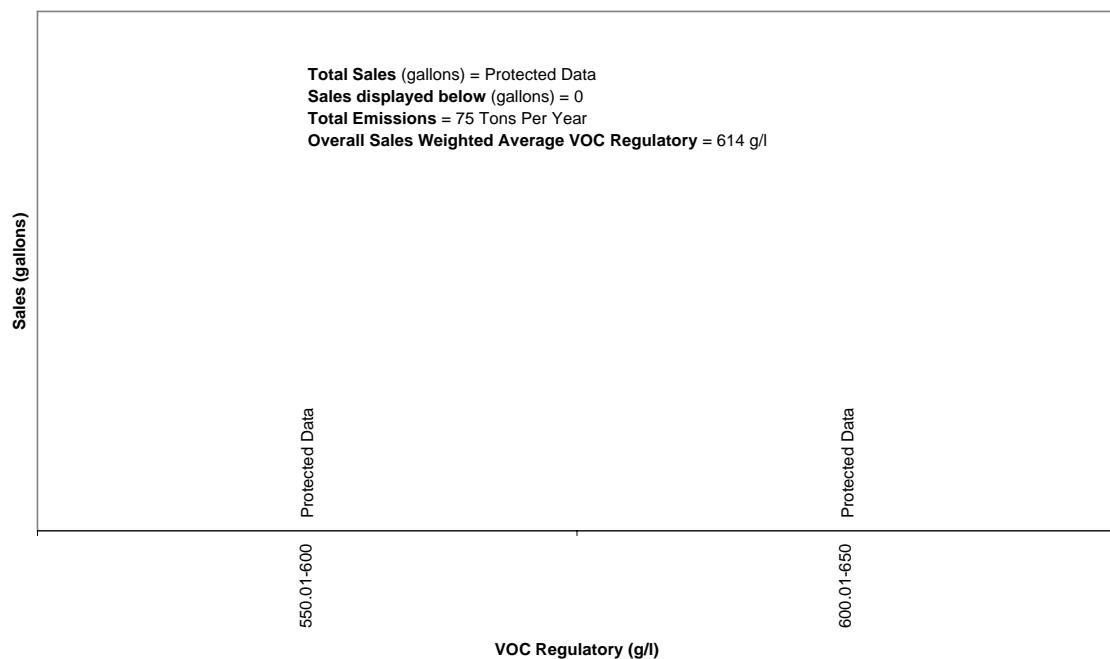


Figure 5-79  
Shellac - Opaque

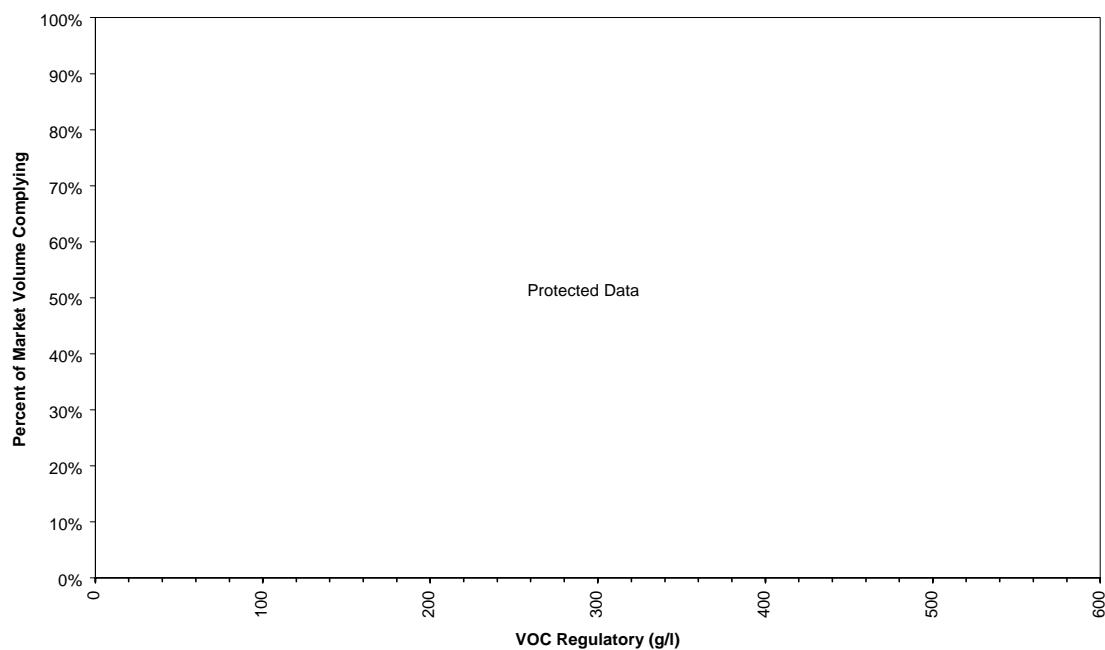
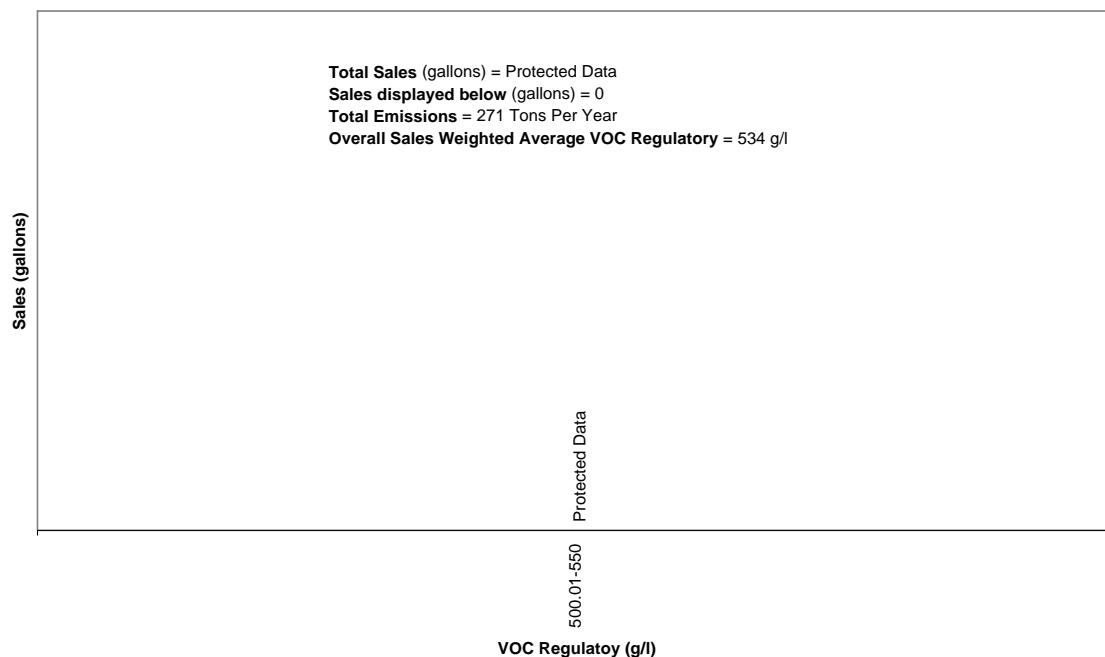
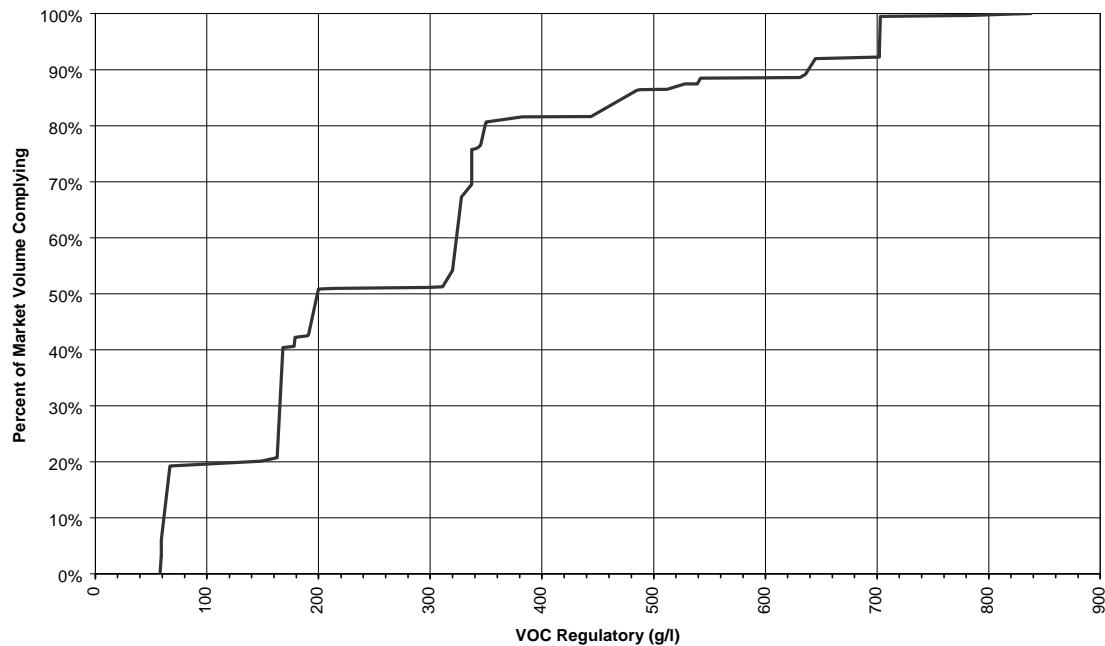


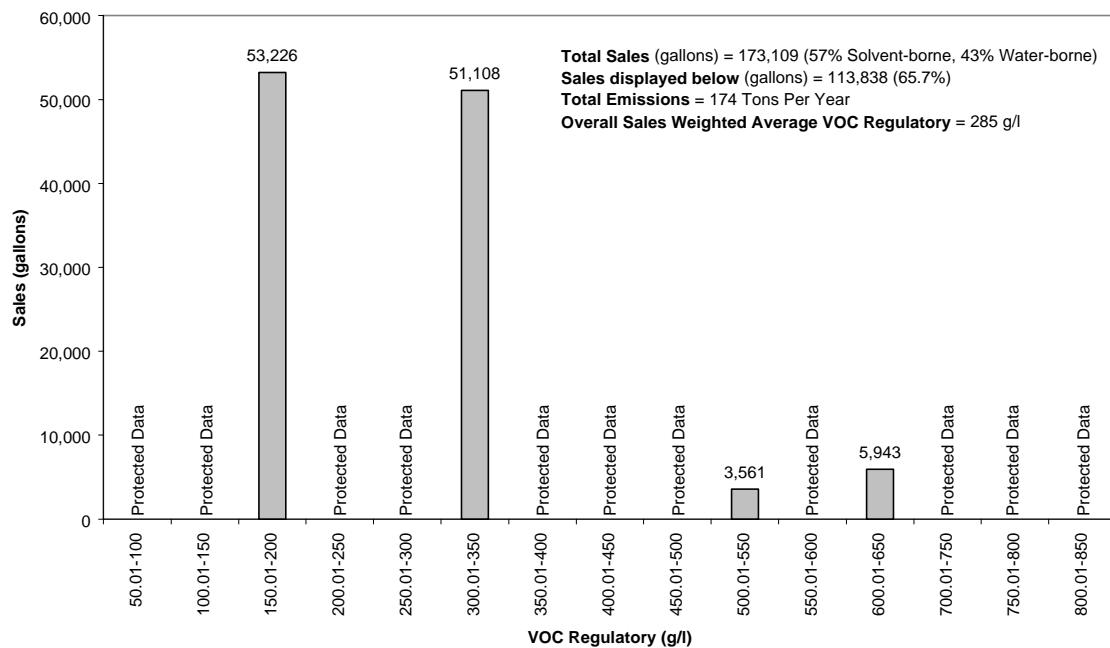
Figure 5-80  
Shellac - Opaque



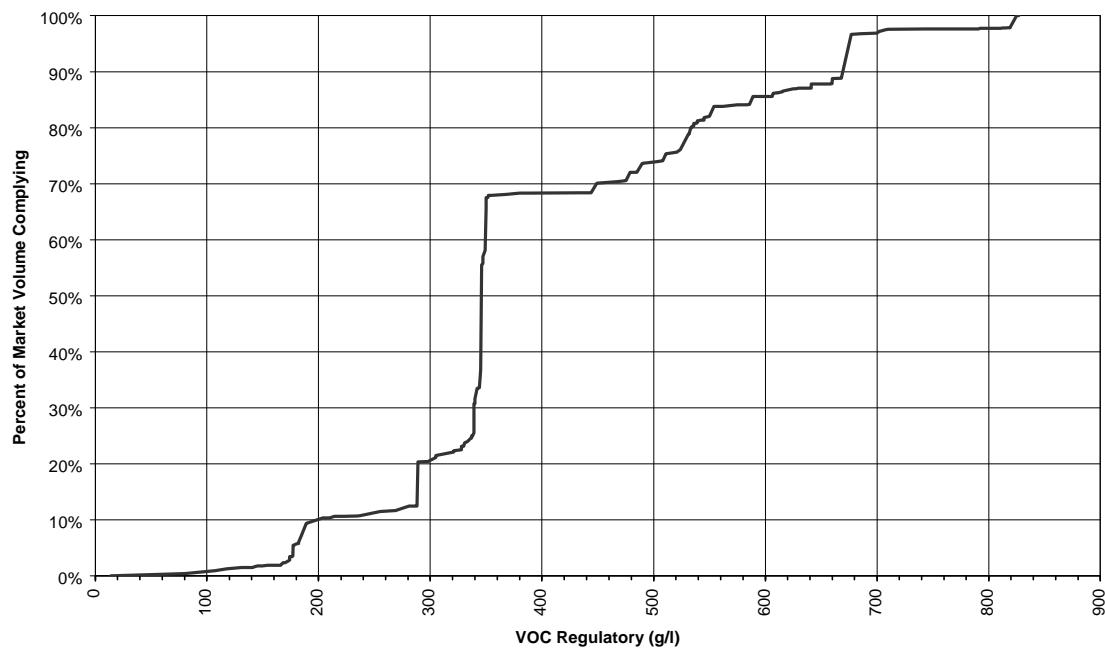
**Figure 5-81**  
**Stain - Clear**



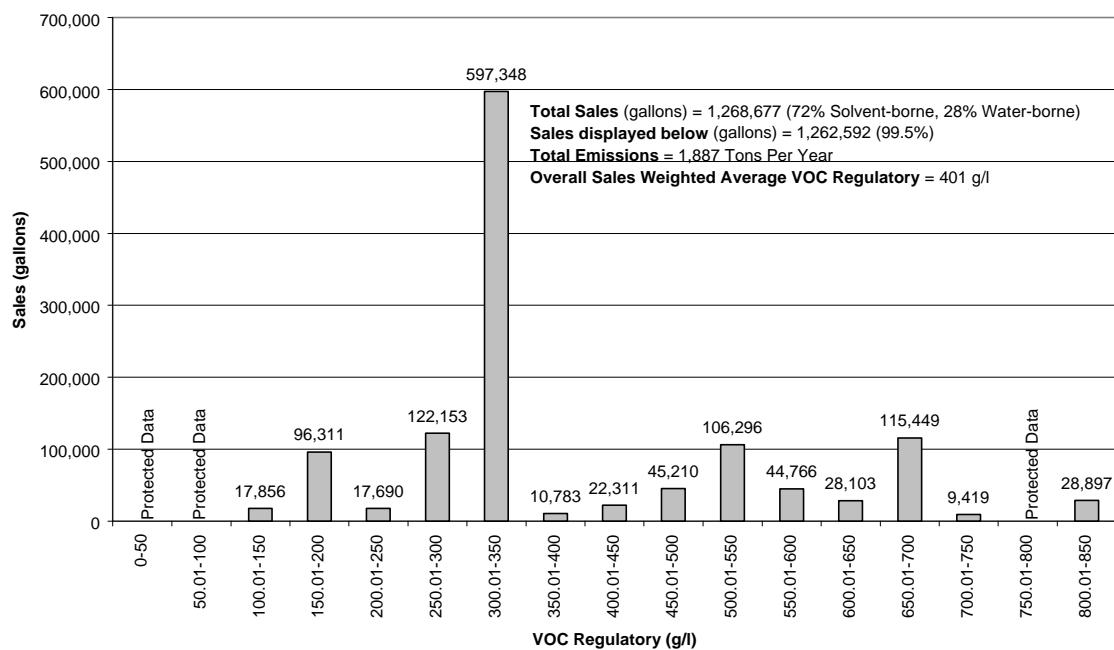
**Figure 5-82**  
**Stain - Clear**



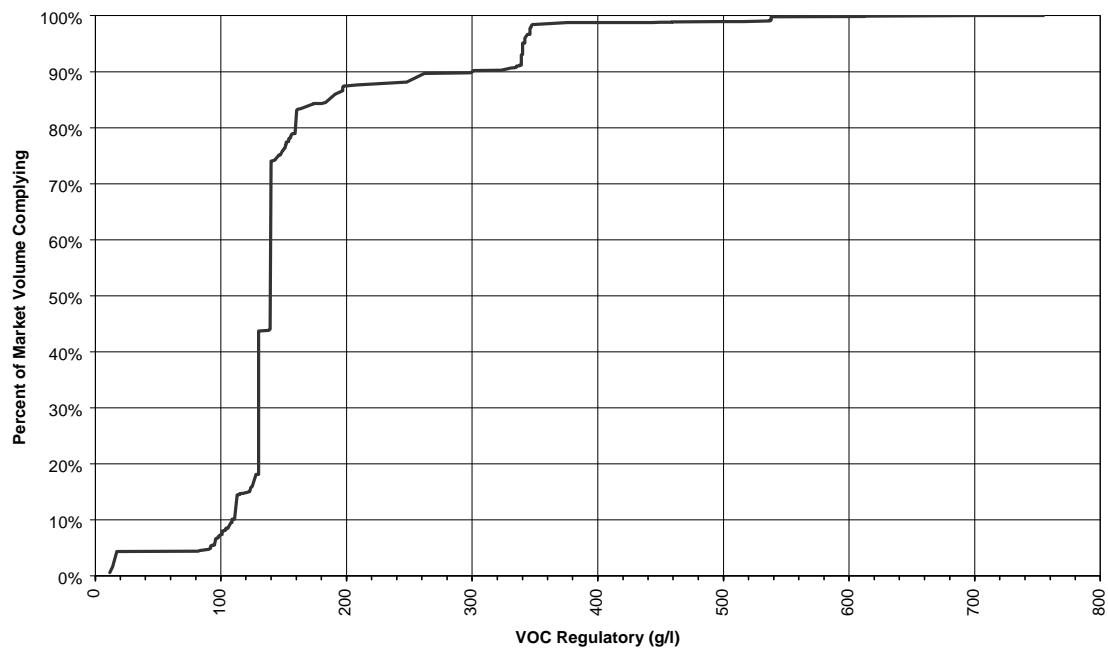
**Figure 5-83**  
**Stain - Semitransparent**



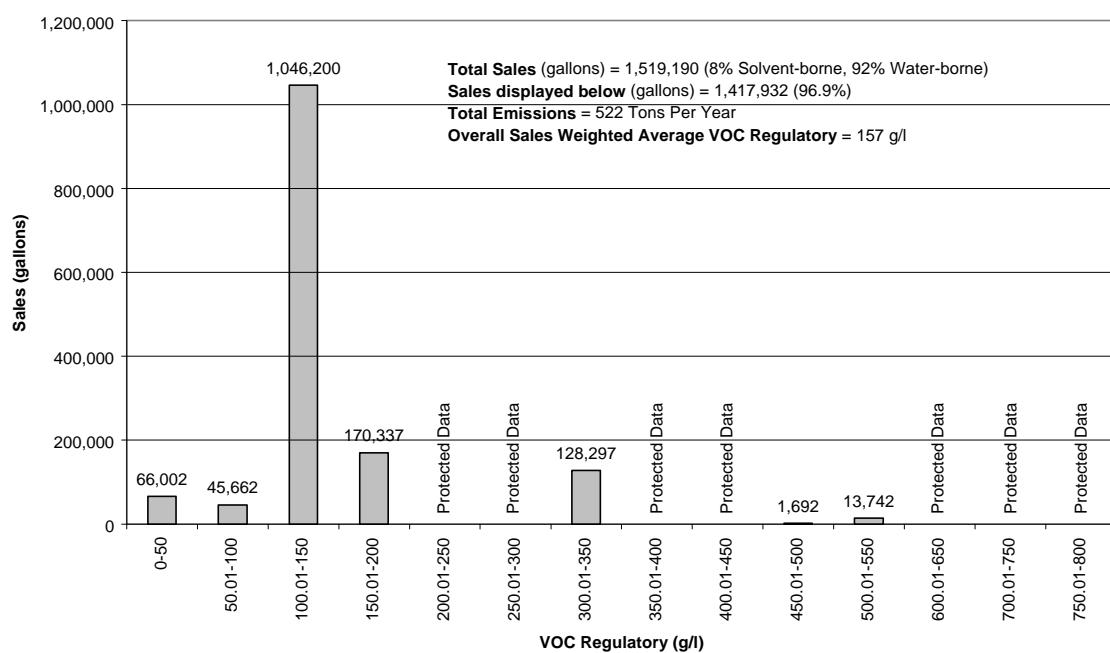
**Figure 5-84**  
**Stain - Semitransparent**



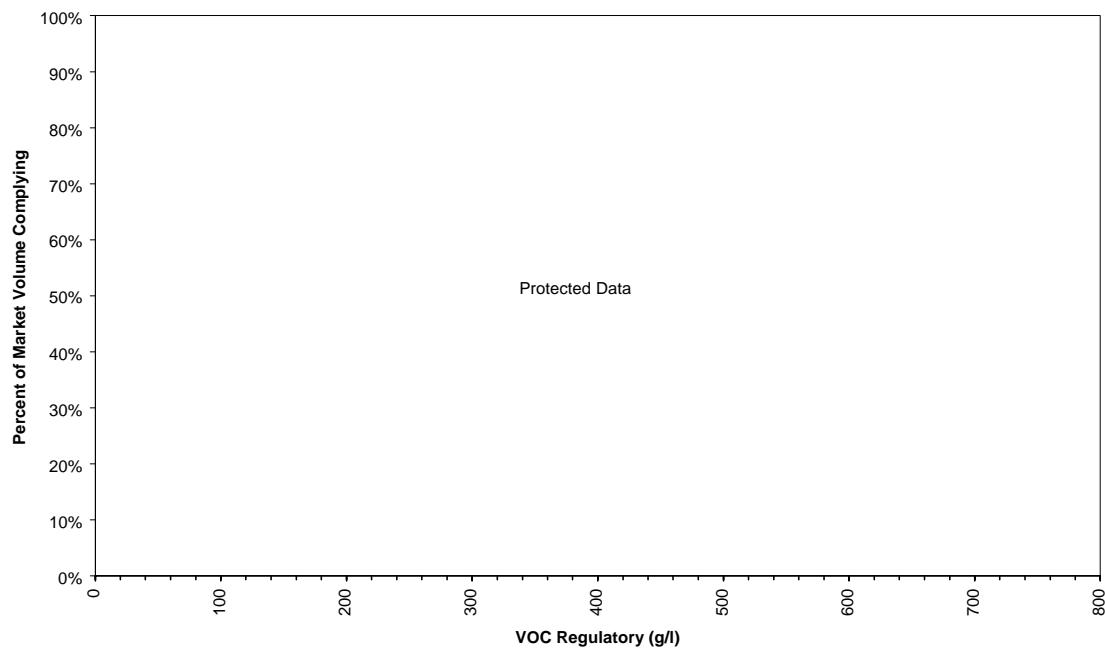
**Figure 5-85**  
**Stain - Opaque**



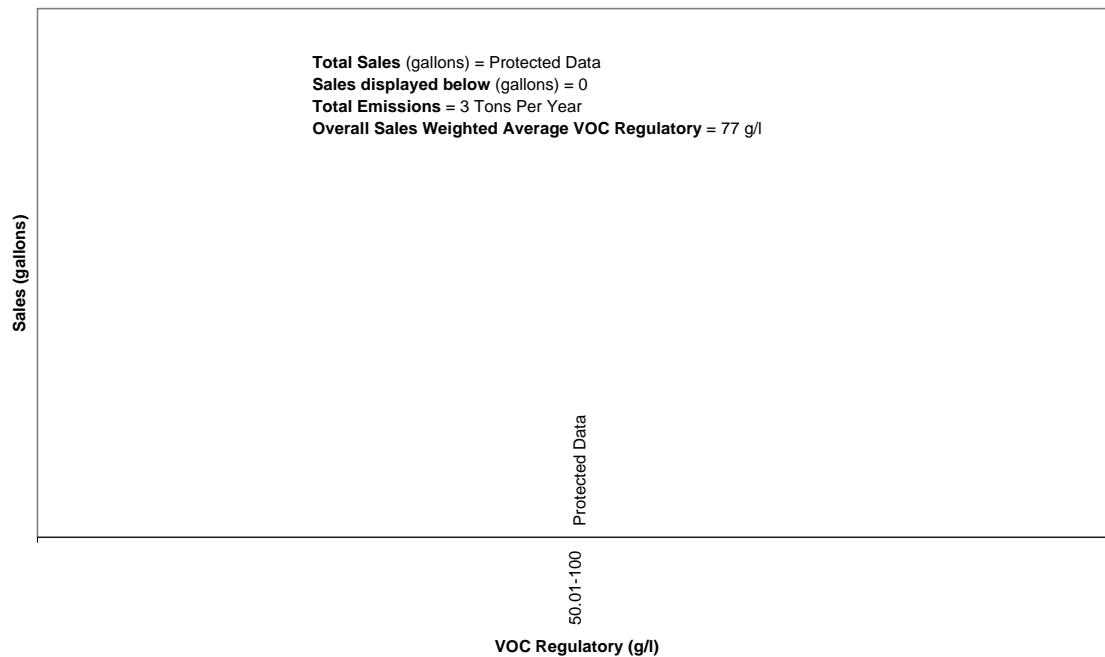
**Figure 5-86**  
**Stain - Opaque**



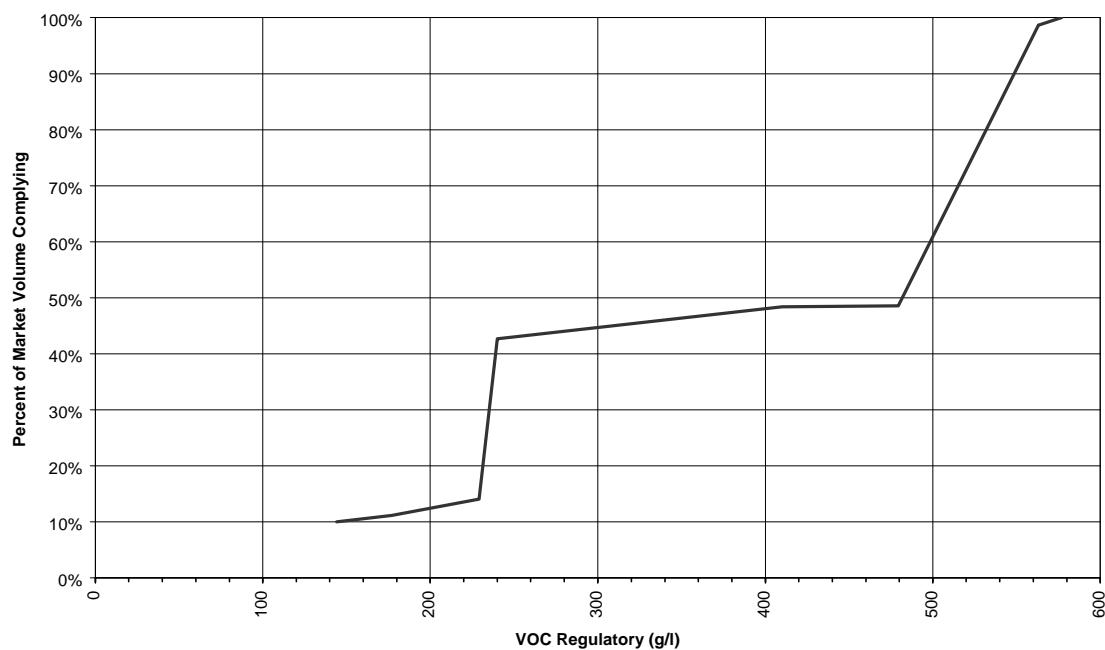
**Figure 5-87**  
**Stain - Low Solid**



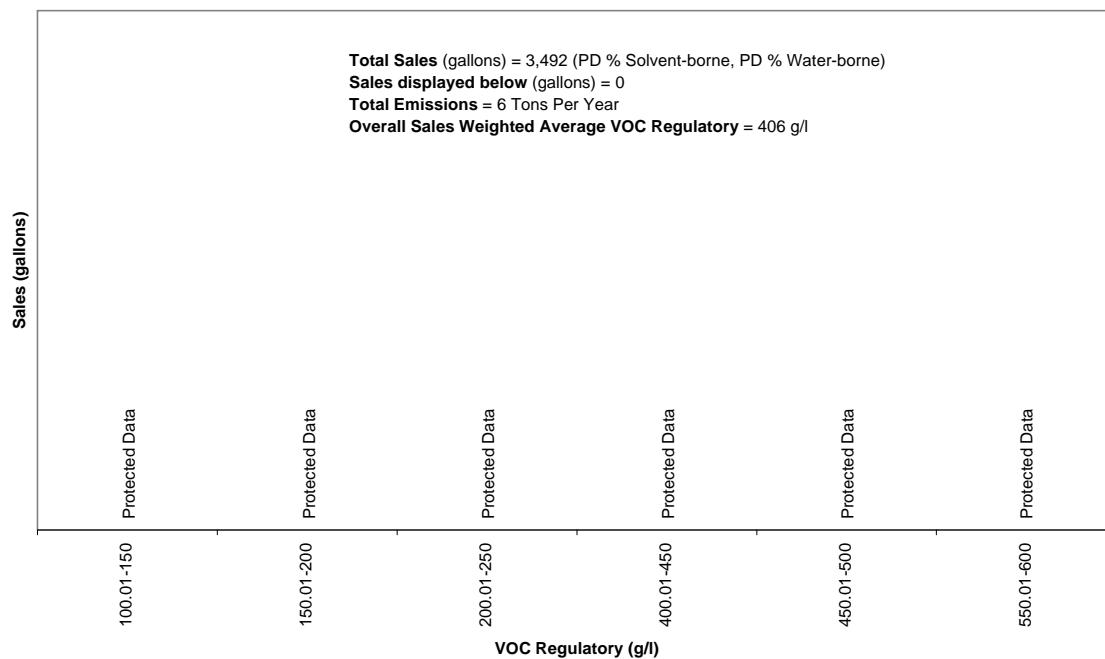
**Figure 5-88**  
**Stain - Low Solid**



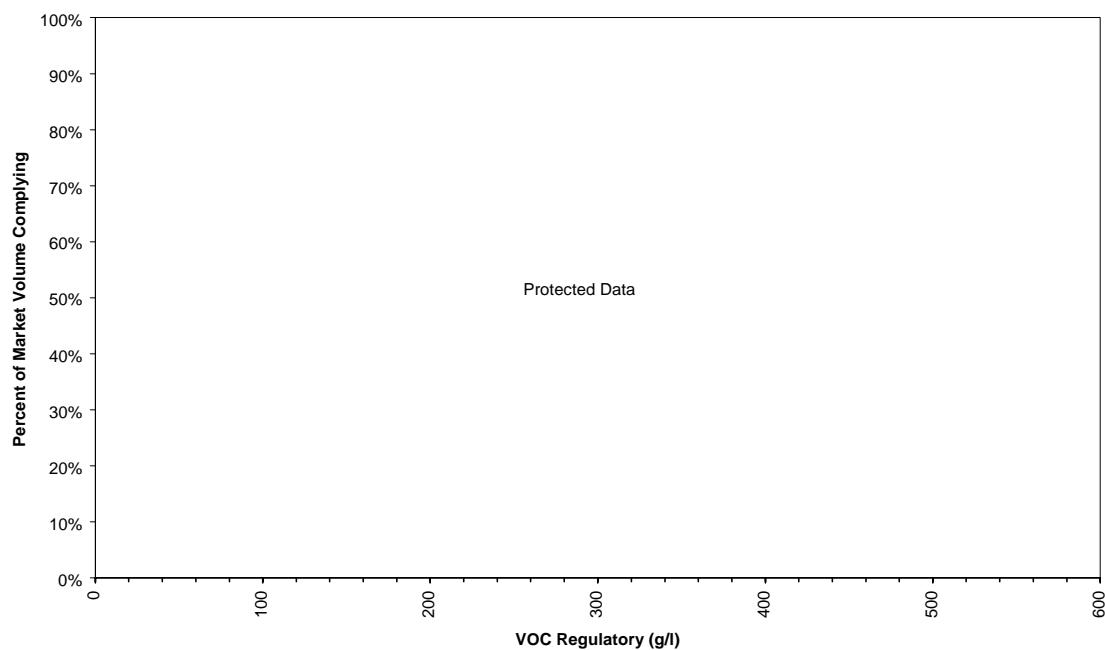
**Figure 5-89**  
**Swimming Pool - General**



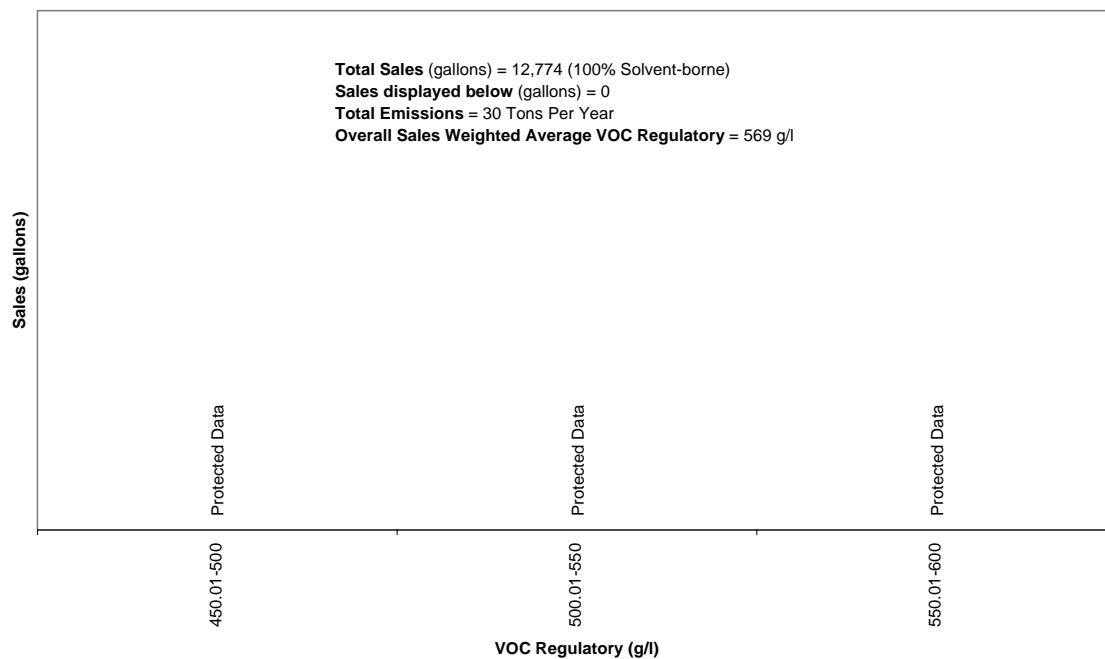
**Figure 5-90**  
**Swimming Pool - General**



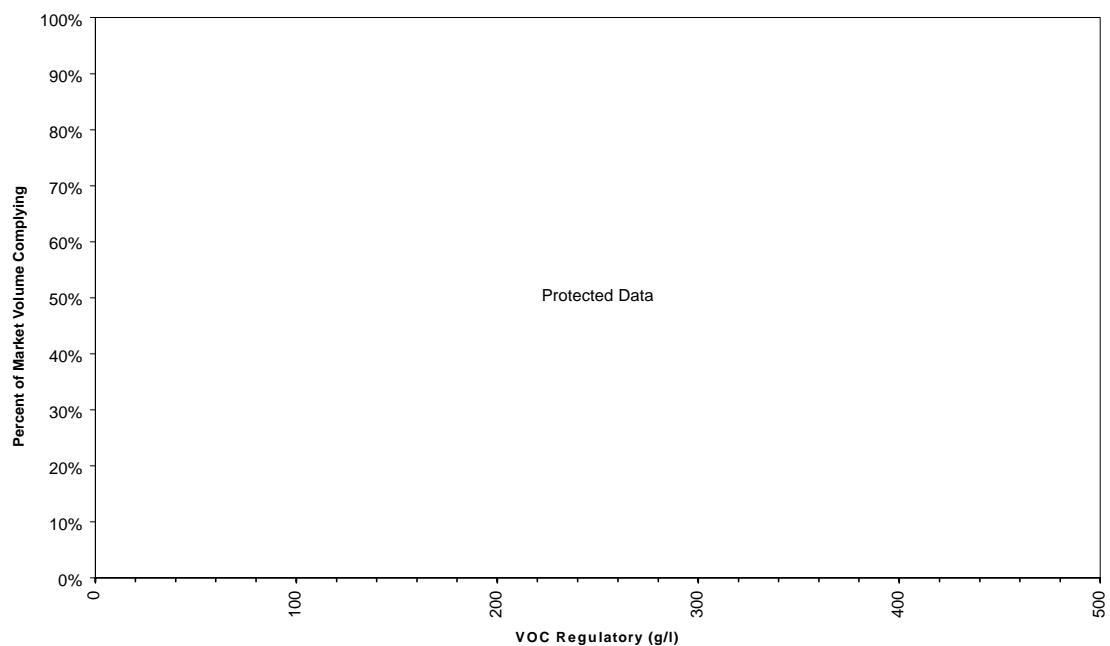
**Figure 5-91**  
**Swimming Pool - Repair**



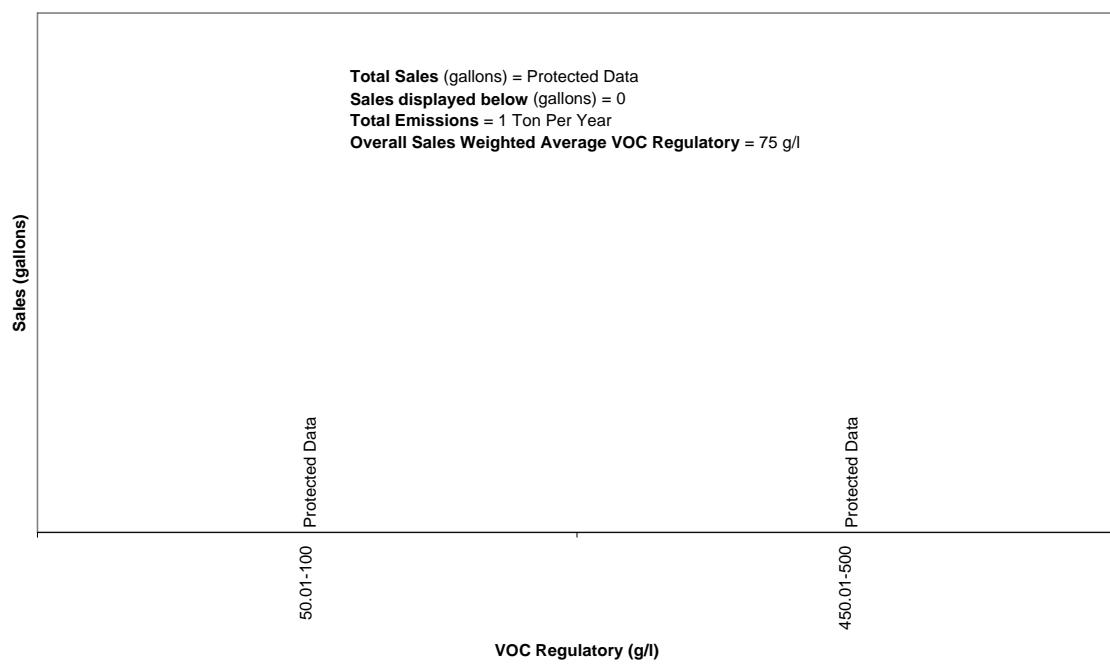
**Figure 5-92**  
**Swimming Pool - Repair**



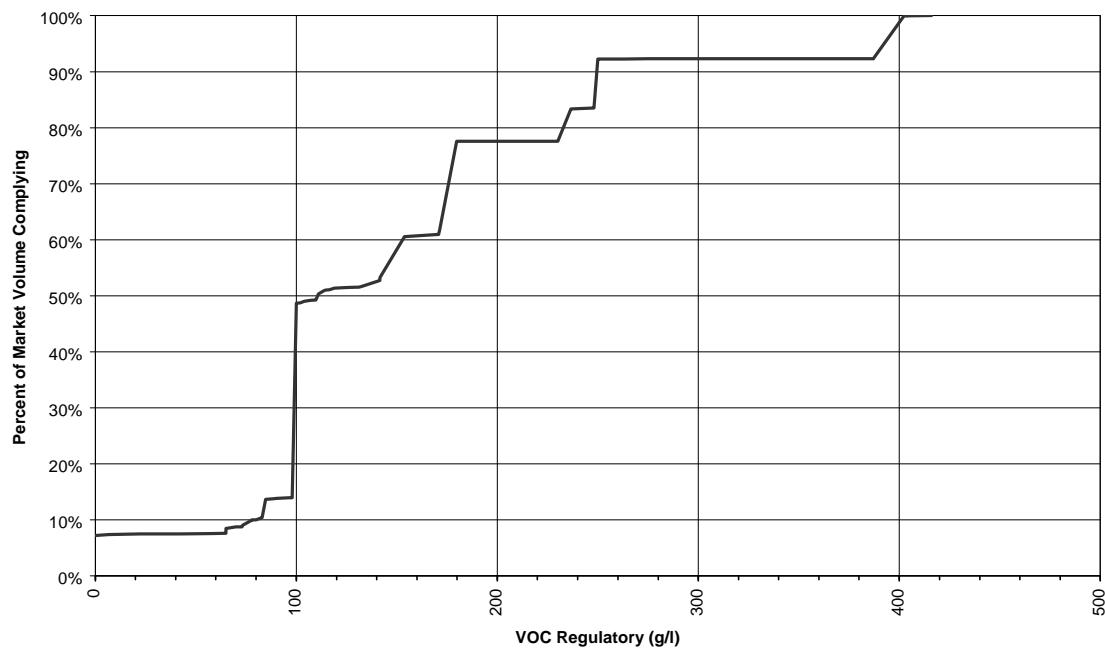
**Figure 5-93**  
**Thermoplastic Rubber & Mastic**



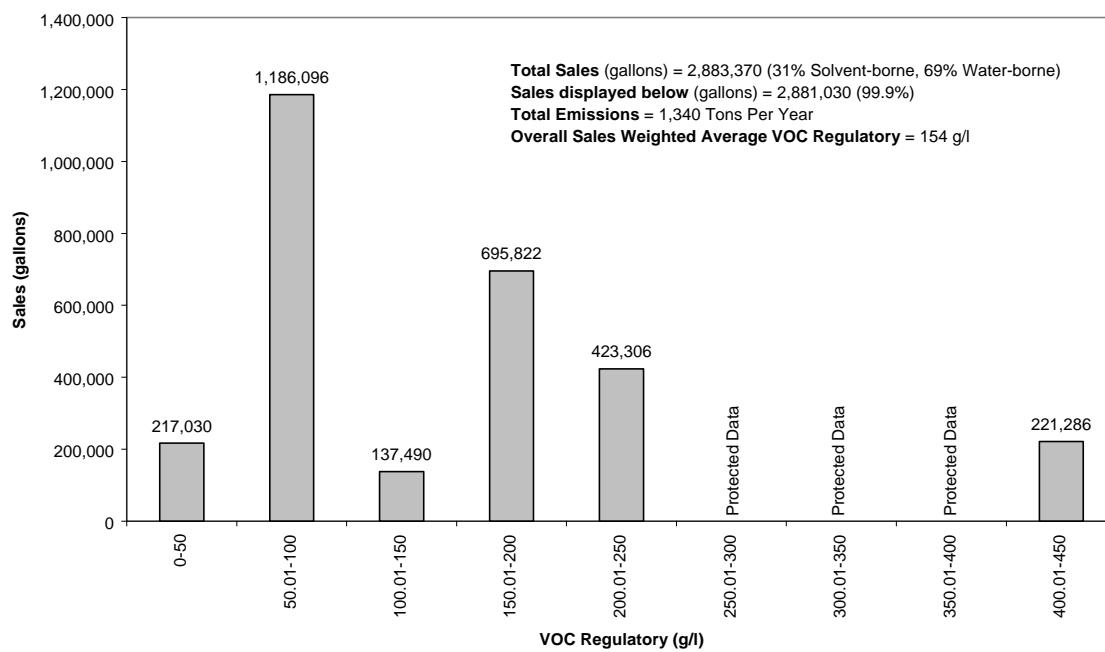
**Figure 5-94**  
**Thermoplastic Rubber & Mastic**



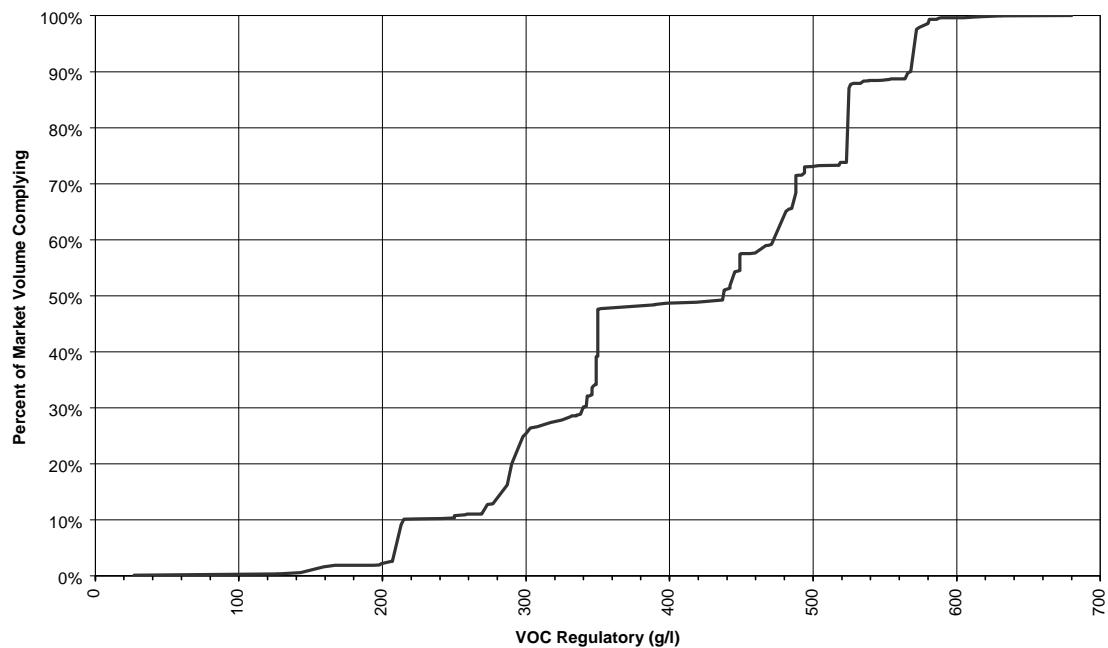
**Figure 5-95**  
Traffic



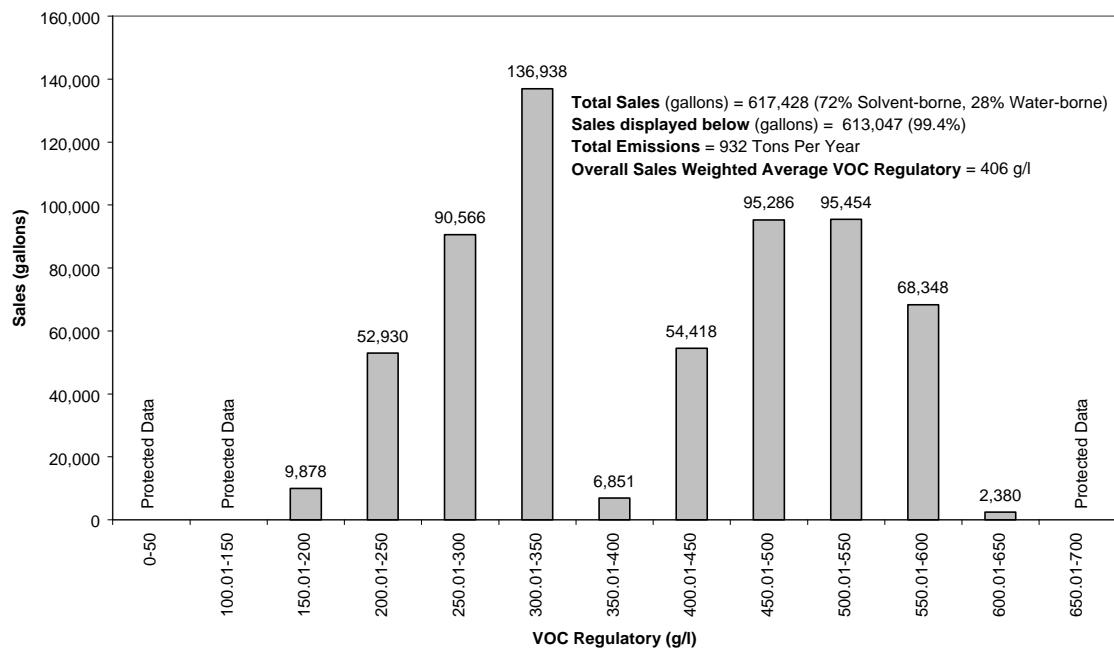
**Figure 5-96**  
Traffic



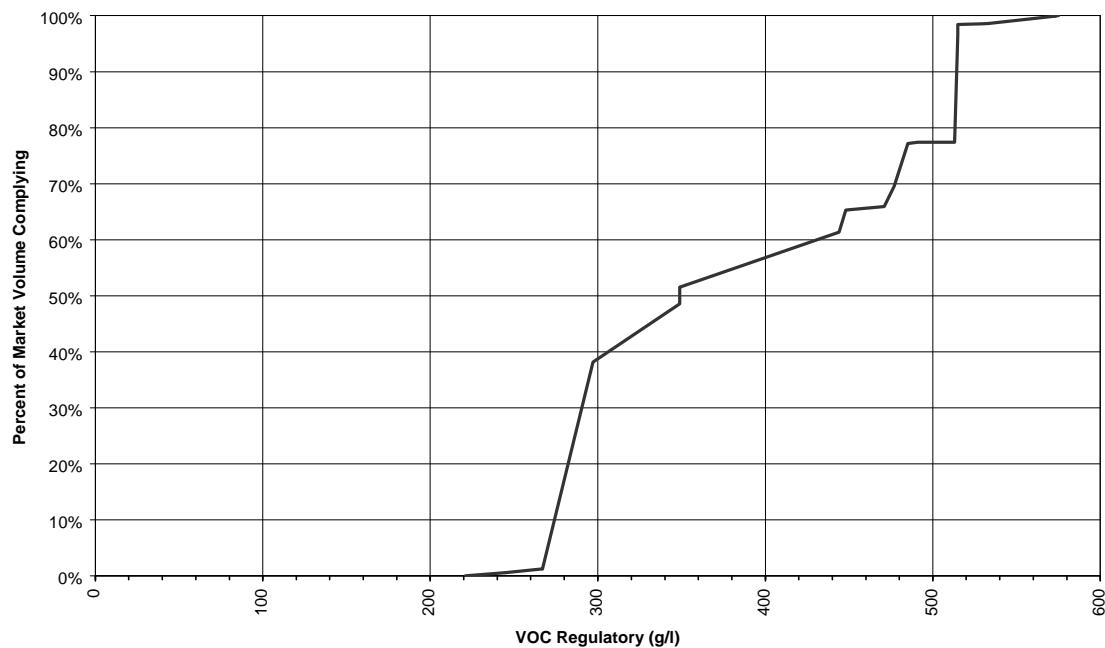
**Figure 5-97**  
Varnish - Clear



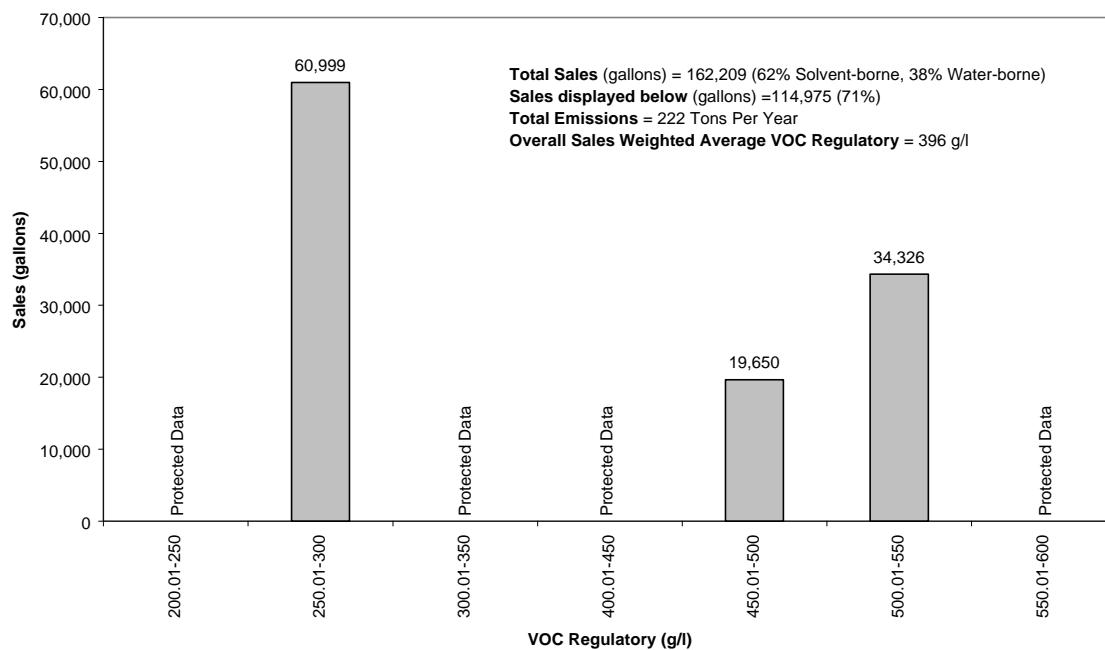
**Figure 5-98**  
Varnish - Clear



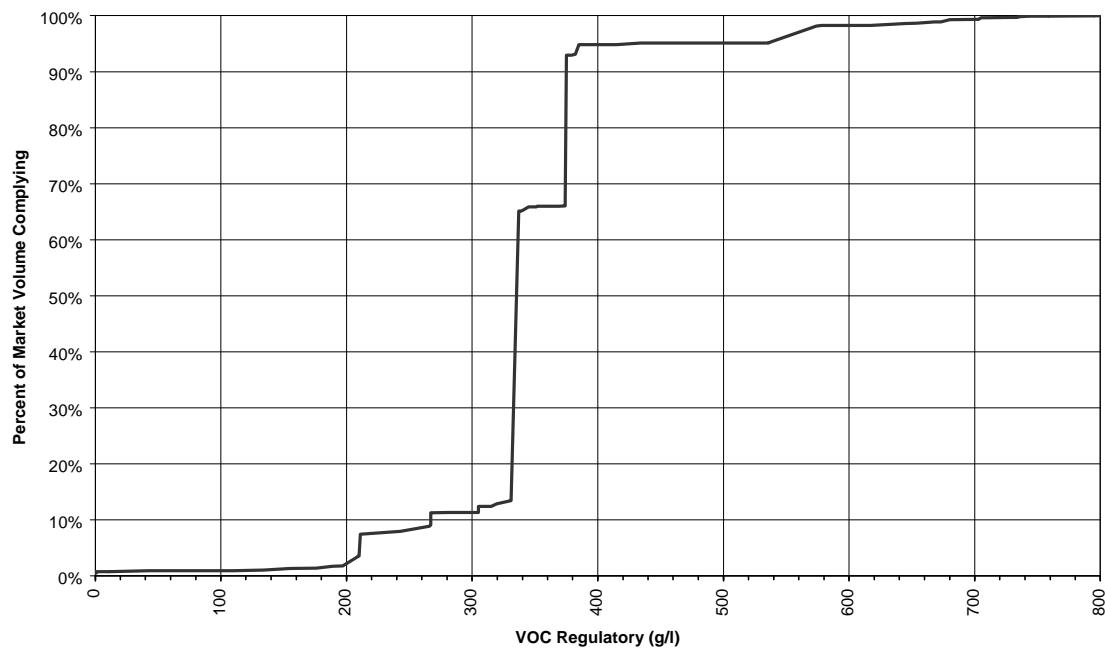
**Figure 5-99**  
Varnish - Semitransparent



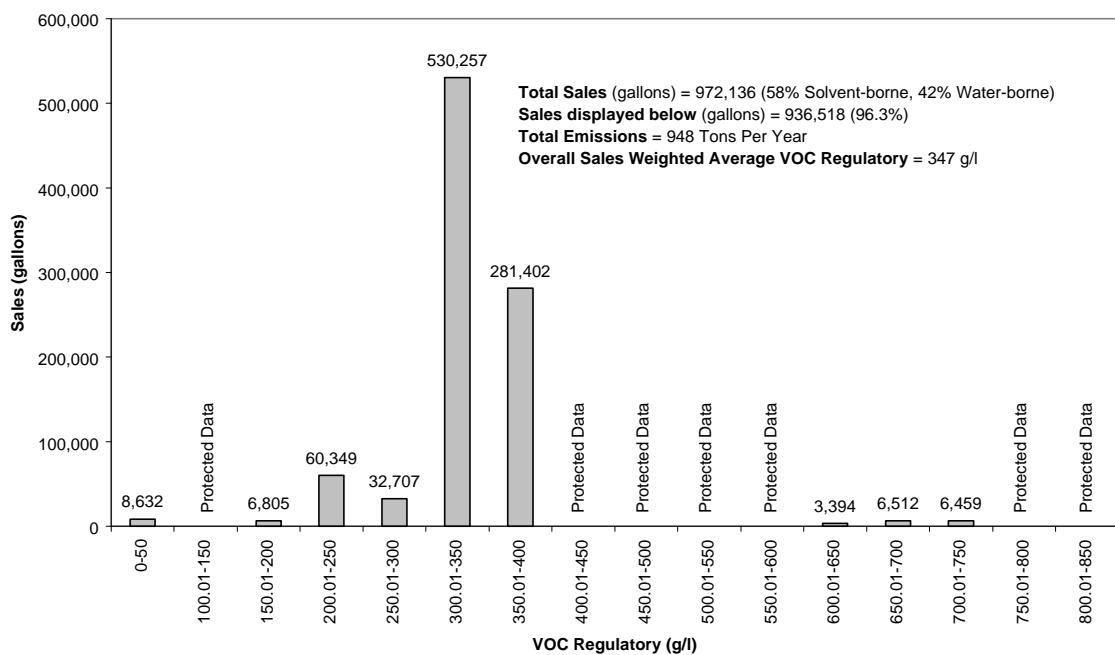
**Figure 5-100**  
Varnish - Semitransparent



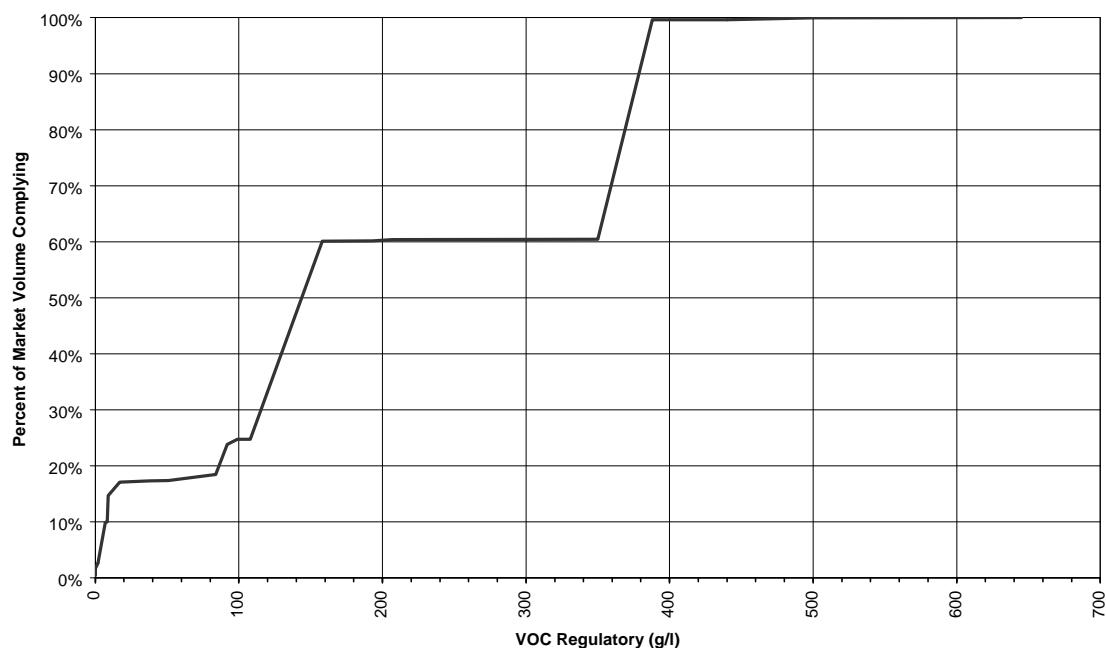
**Figure 5-101**  
**Waterproofing Sealer - Clear**



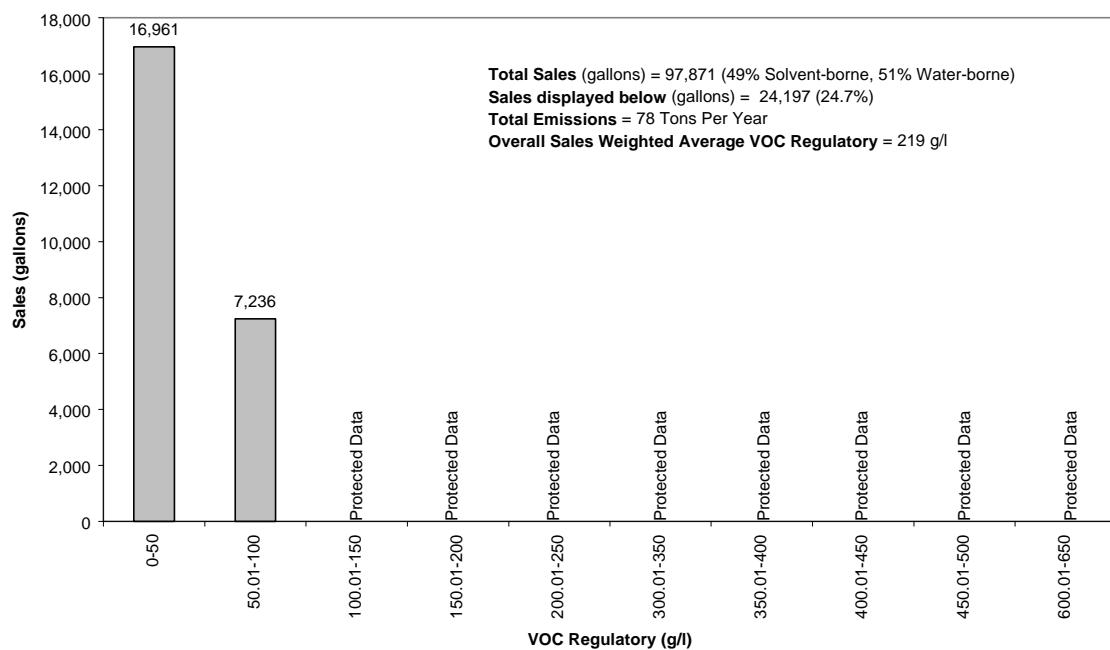
**Figure 5-102**  
**Waterproofing Sealer - Clear**



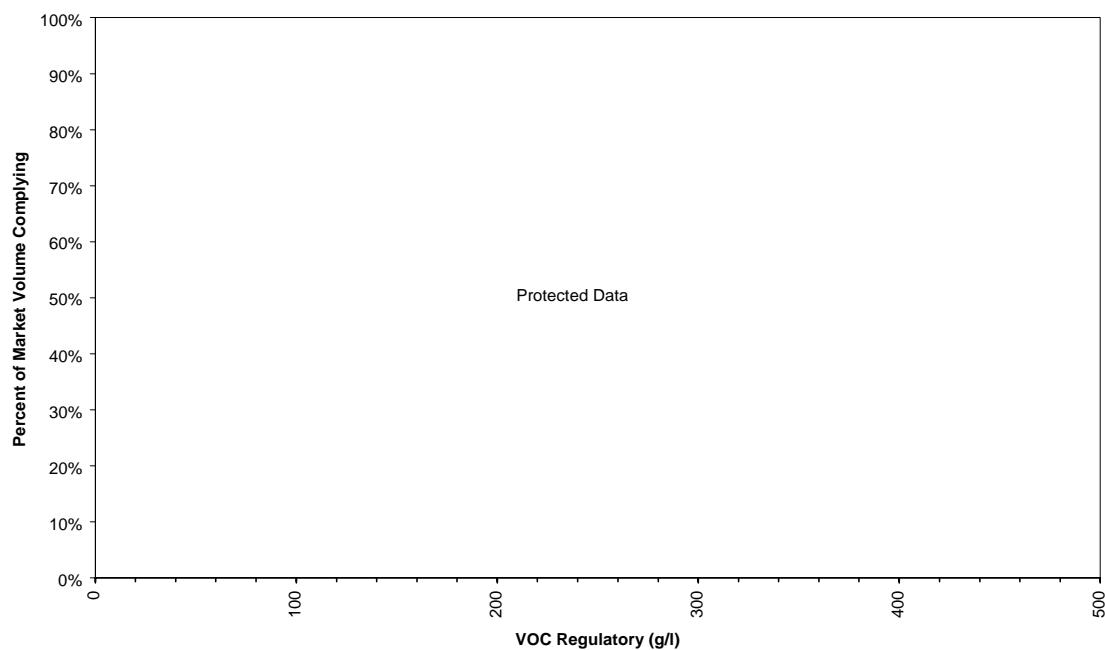
**Figure 5-103**  
**Waterproofing Sealer - Opaque**



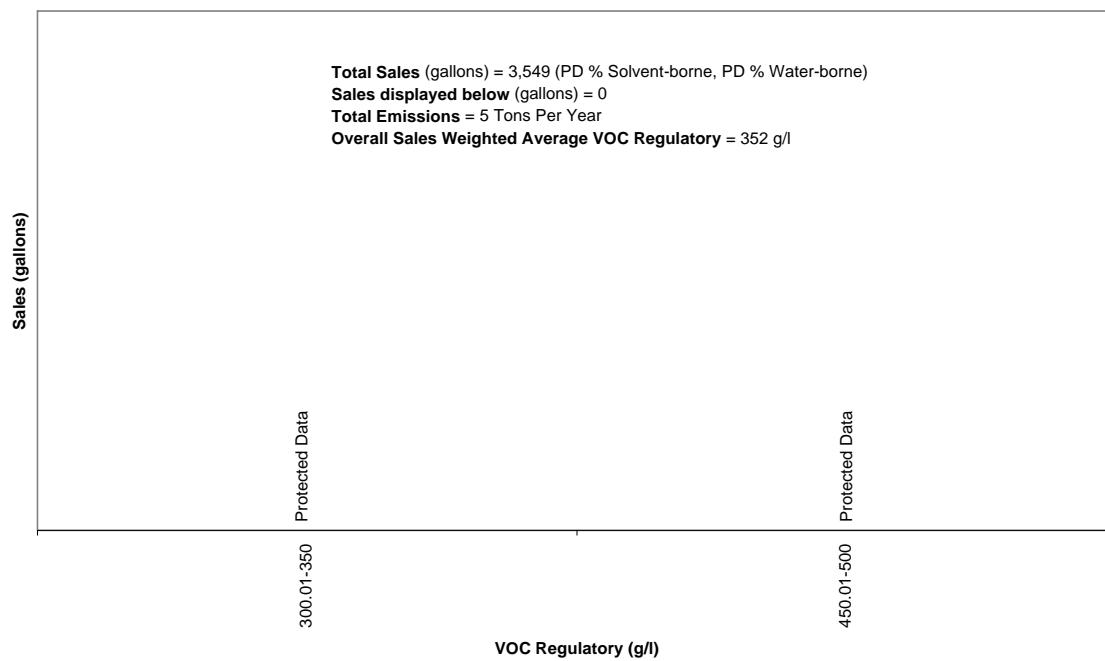
**Figure 5-104**  
**Waterproofing Sealer - Opaque**



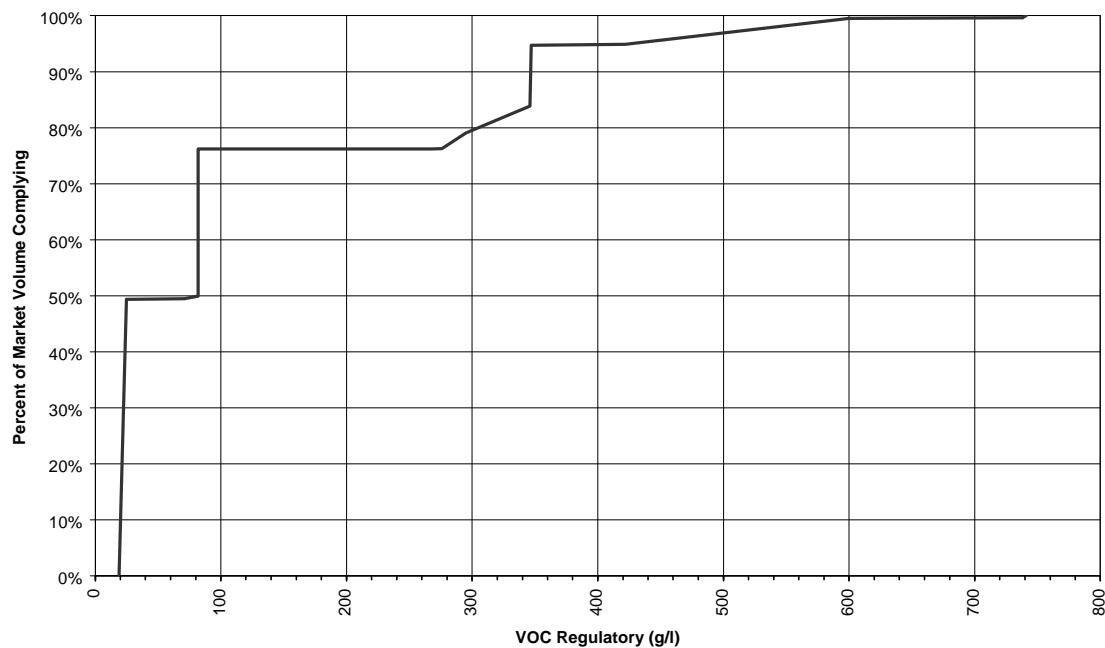
**Figure 5-105**  
**Wood Preservative - Below Ground**



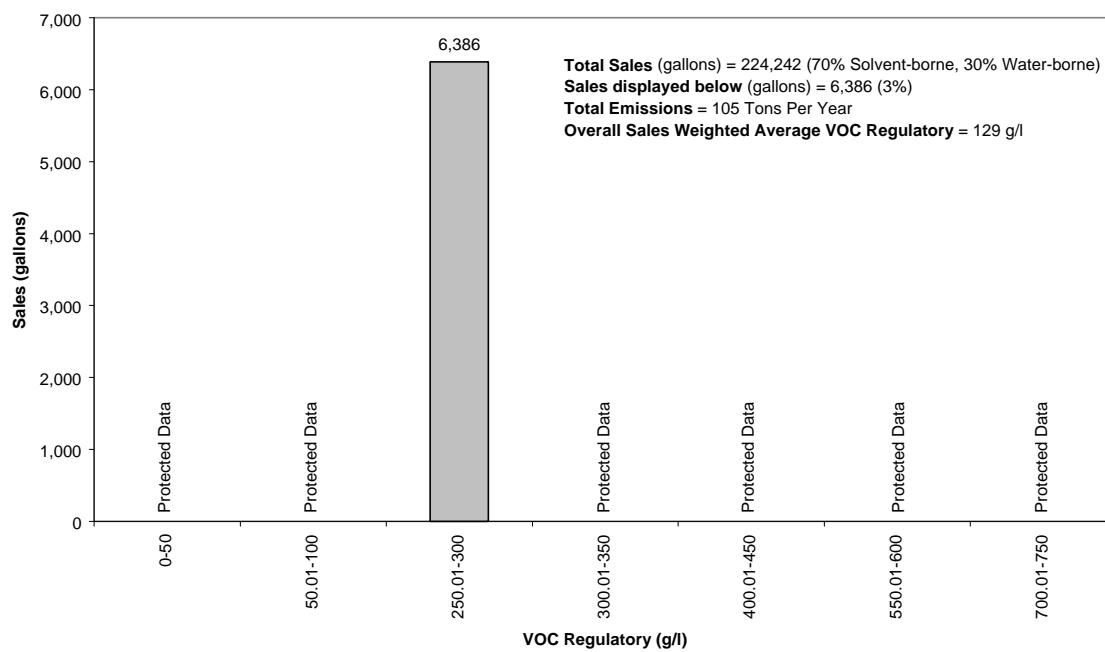
**Figure 5-106**  
**Wood Preservative - Below Ground**



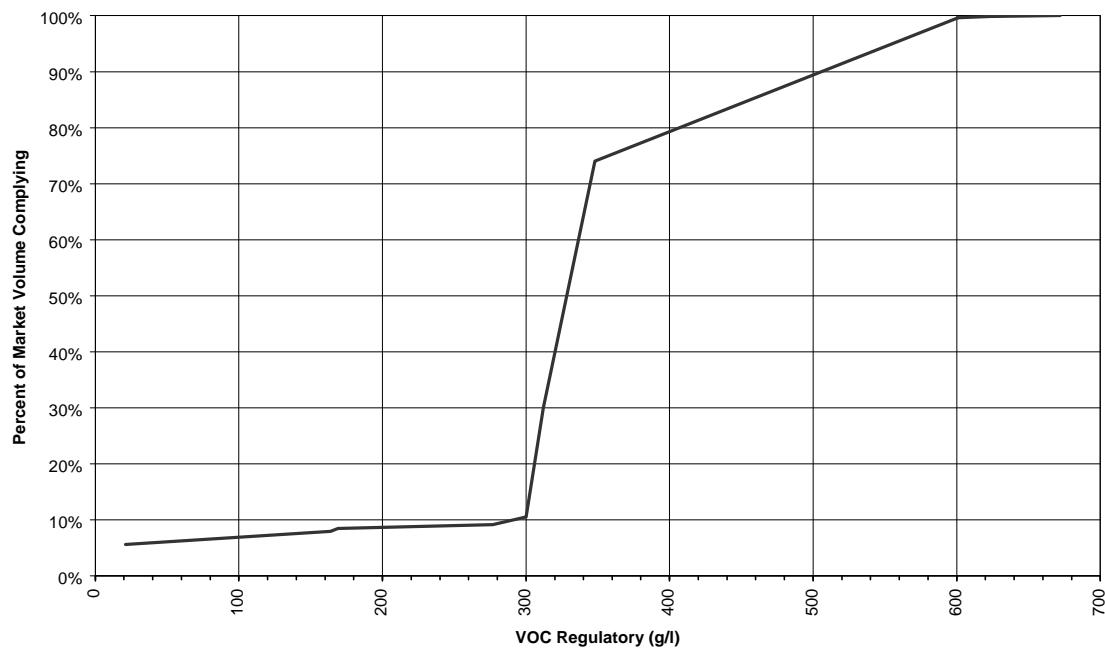
**Figure 5-107**  
**Wood Preservative - Clear**



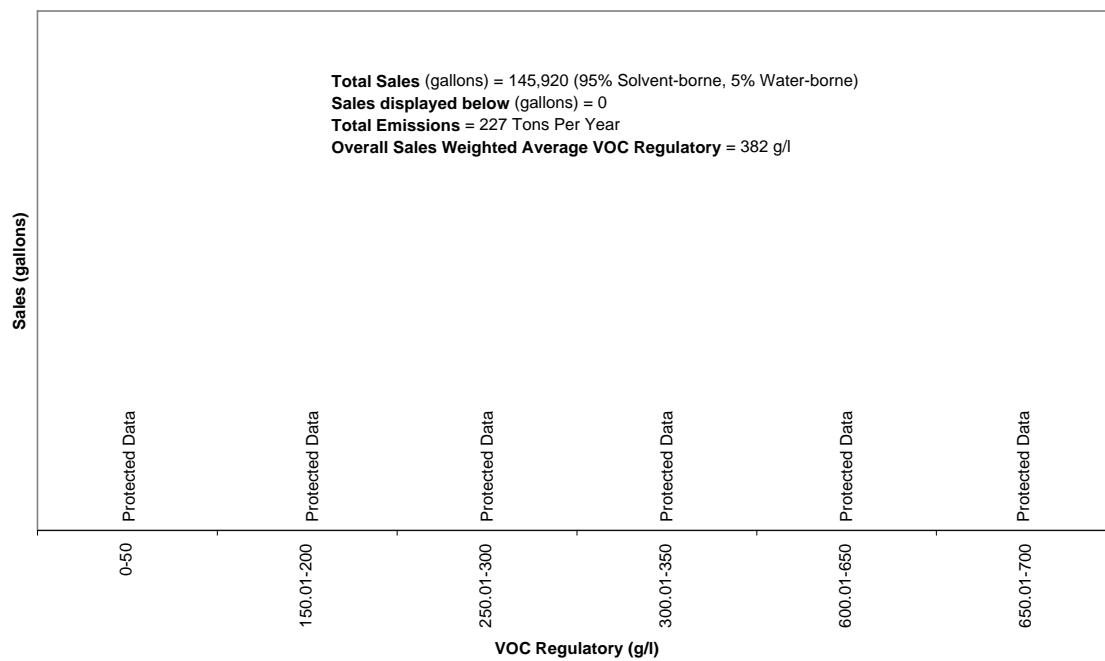
**Figure 5-108**  
**Wood Preservative - Clear**



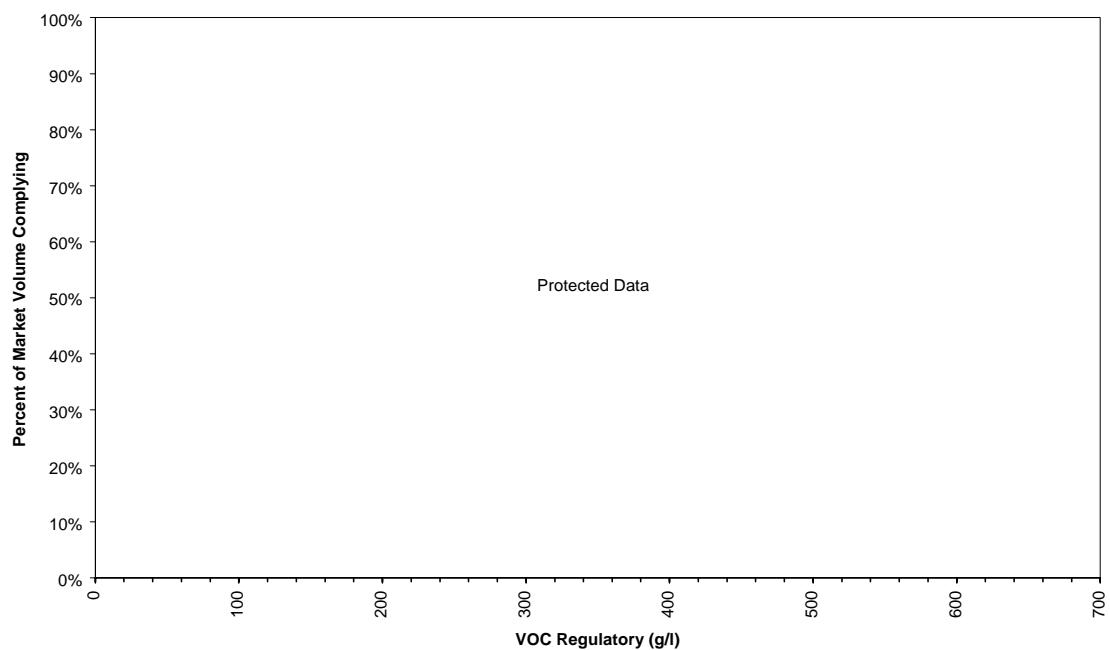
**Figure 5-109**  
**Wood Preservative - Semitransparent**



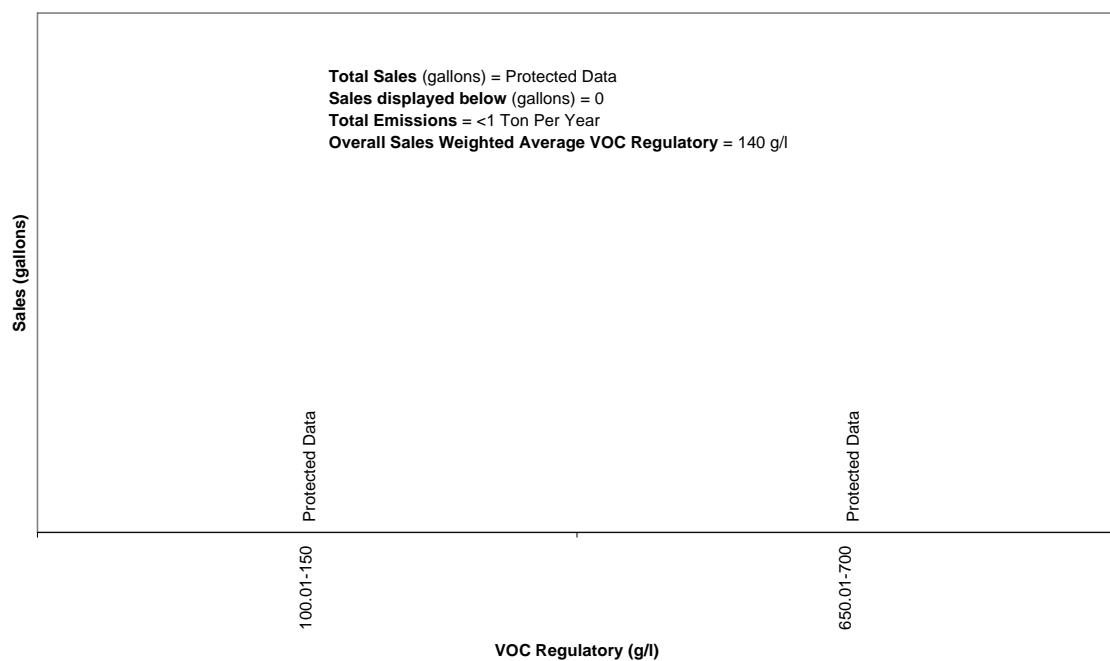
**Figure 110**  
**Wood Preservative - Semicomplete**



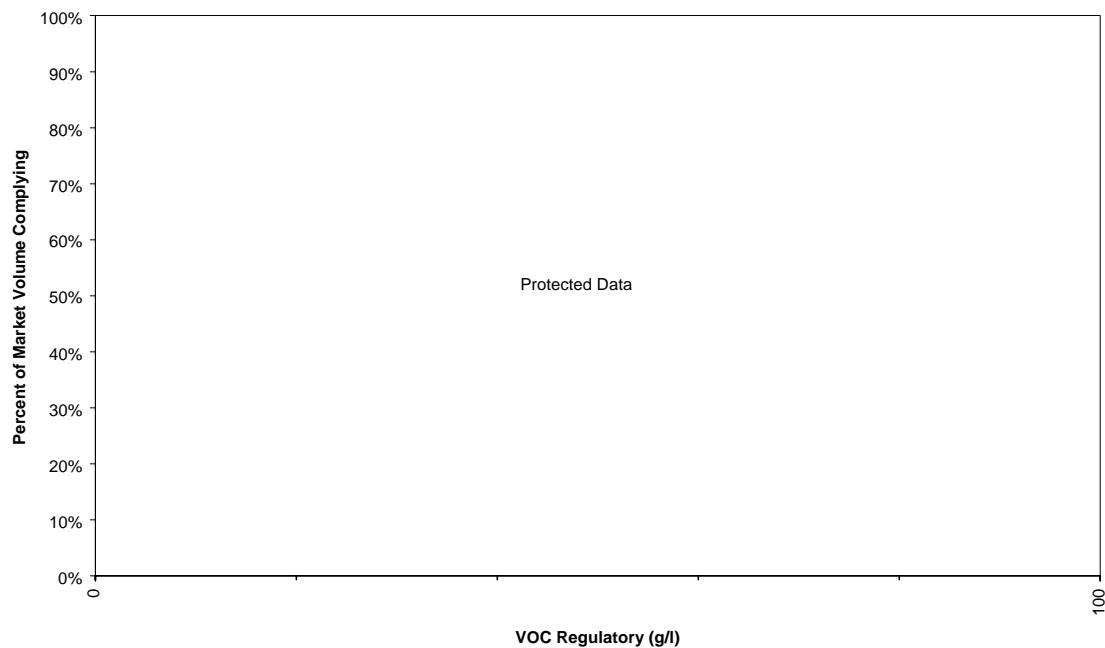
**Figure 5-111**  
**Wood Preservative - Opaque**



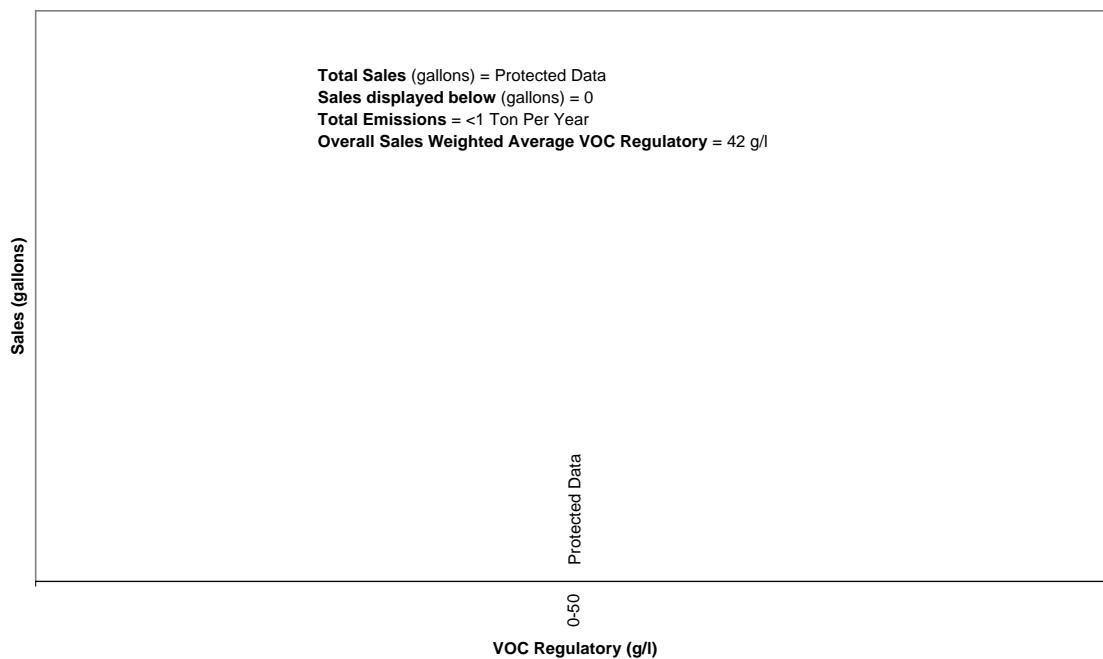
**Figure 5-112**  
**Wood Preservative - Opaque**



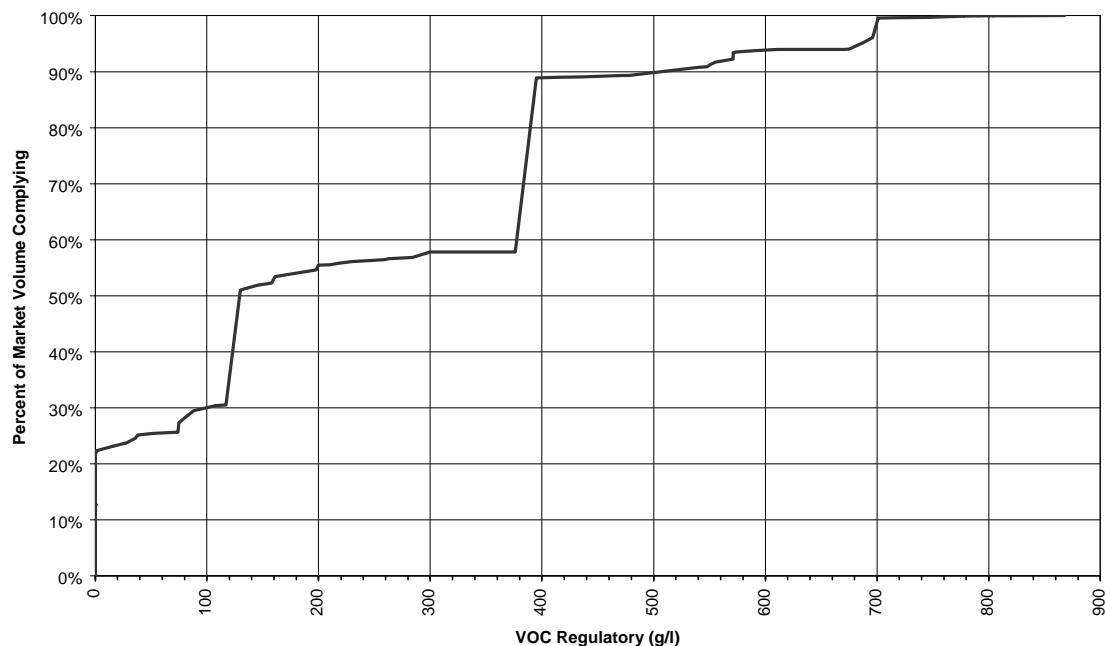
**Figure 5-113  
Wood Preservative - Low Solid**



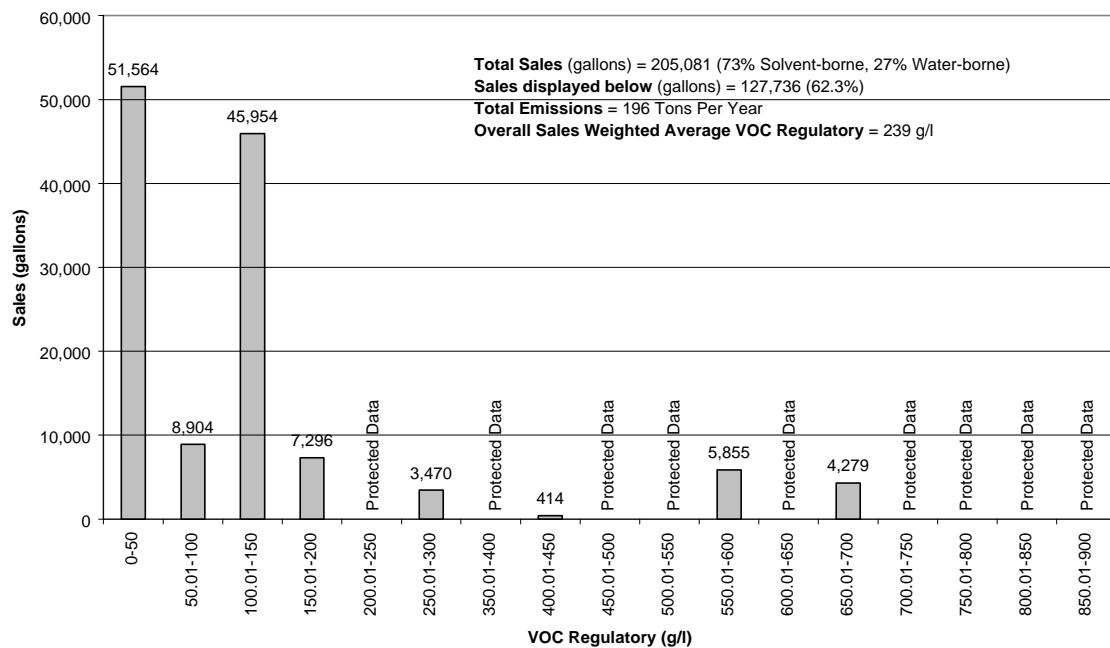
**Figure 5-114  
Wood Preservative - Low Solid**



**Figure 5-115**  
**Other**



**Figure 5-116**  
**Other**



## Chapter 6 – Summary Table

Table 6-1 represents a comprehensive summary of the data collected from FORM II (see Appendix A) of the 1998 Architectural Coatings Survey. Fifty-eight categories were surveyed, but only 56 are shown with California sales data. No sales data were reported for antenna and flow coating categories. Data not complying with the “Three Company Rule” were concealed using the acronym “PD” which means “Protected Data”.

As seen in Table 6-1, 1996 coating sales in California totaled 87.5 million gallons, with 82 percent of the sales being water-borne and 18 percent being solvent-borne. Total emissions were 36,300 Tons Per Year (TPY ) or 100 Tons Per Day (TPD), with solvent-borne coatings accounting for 61 percent and water-borne coatings accounting for 39 percent. Individual values for sale volumes and emissions are provided for each coating category.

Table 6-1 begins on page 86 with category breakdowns of total sales. Page 87 contains category breakdowns of VOC contents for each category as sales weighted averages (SWA). Table 6-1 concludes on page 88 with percent by volume solids (SWA), density (SWA), and emissions in Tons Per Day. The emission values presented in Table 6-1 do not include emissions from thinning and clean-up.

**Table 6-1**  
1998 Architectural Coatings Survey Summary (1996 Sales Data)

| Category                                | Description                                    | Total Sales<br>(gals)        | SB Sales<br>(gals) | WB Sales<br>(gals)       | % SB<br>(gals) | % WB<br>(gals) | % Interior<br>(gals) | % Exterior<br>(gals) | % Dual<br>(gals) |
|---|--|------------------------------|--------------------|--------------------------|----------------|----------------|----------------------|----------------------|------------------|
| <b>NO DATA SUBMITTED</b>                |  |                              |                    |                          |                |                |                      |                      |                  |
| 1                                       | Antenna  |                              |                    |                          |                |                |                      |                      |                  |
| 2                                       | Anti-fouling                                   | PD                           | PD                 | 0                        | 100            | 0              | 0                    | 100                  | 0                |
| 3                                       | Anti-graffiti                                  | 2,573                        | PD                 | PD                       | PD             | PD             | 0                    | 27                   | 73               |
| 4                                       | Bituminous                                     | 4,919,627                    | 1,295,827          | 3,623,800                | 26             | 74             | 0                    | 92                   | 8                |
| 5                                       | Bond breakers                                  | PD                           | PD                 | PD                       | <1             | 100            | 0                    | 100                  | 0                |
| 6                                       | Chalkboard resurfacers                         | PD                           | 0                  | PD                       | 0              | 100            | 100                  | 0                    | 0                |
| 7                                       | Concrete curing compounds                      | 411,118                      | 11,820             | 399,298                  | 3              | 97             | 0                    | 0                    | 100              |
| 8                                       | Dry Fog  | 202,902                      | 76,661             | 126,241                  | 38             | 62             | 98                   | 0                    | 2                |
| 9                                       | Extreme high durability                        | 21,855                       | 21,855             | 0                        | 100            | 0              | 0                    | 0                    | 100              |
| 10                                      | Fire retardant - clear                         | PD                           | 0                  | PD                       | 0              | 100            | 96                   | 4                    | 0                |
| 11                                      | Fire retardant - opaque                        | 56,209                       | 10,297             | 45,912                   | 18             | 82             | 6                    | 94                   | 0                |
| 12                                      | Flats  | 31,828,705                   | 27,837             | 31,800,868               | 0              | 100            | 41                   | 30                   | 29               |
| 13                                      | Floor  | 1,150,961                    | 493,568            | 657,393                  | 43             | 57             | 19                   | 6                    | 75               |
| 14                                      | Flow   |                              |                    |                          |                |                |                      |                      |                  |
| 15                                      | Form release                                   | 83,243                       | 11,025             | 72,218                   | 13             | 87             | 0                    | <1                   | 100              |
| 16                                      | Graphic arts (sign)                            | 40,366                       | PD                 | PD                       | PD             | PD             | 10                   | 19                   | 71               |
| 17                                      | Heat reactive                                  | PD                           | PD                 | 0                        | 100            | 0              | 0                    | 0                    | 100              |
| 18                                      | High temperature                               | 23,014                       | 22,839             | 175                      | 99             | 1              | 1                    | 27                   | 72               |
| 19                                      | Industrial maintenance                         | 4,281,466                    | 3,902,392          | 379,074                  | 91             | 9              | 4                    | 12                   | 84               |
| 20                                      | Lacquer - clear                                | 464,214                      | 445,448            | 16,766                   | 96             | 4              | 100                  | 0                    | 0                |
| 21                                      | Lacquer - opaque                               | 207,403                      | 180,490            | 26,913                   | 87             | 13             | 98                   | 0                    | 2                |
| 22                                      | Magnesite cement                               | 37,501                       | PD                 | PD                       | PD             | PD             | 0                    | 20                   | 80               |
| 23                                      | Mastic texture                                 | 299,727                      | PD                 | PD                       | PD             | PD             | 10                   | 73                   | 17               |
| 24                                      | Metallic pigmented                             | 392,827                      | 272,965            | 119,862                  | 69             | 31             | 0                    | 91                   | 9                |
| 25                                      | Multi color                                    | 40,224                       | PD                 | PD                       | PD             | PD             | 54                   | 0                    | 46               |
| 26                                      | Nonflats - high gloss                          | 2,150,818                    | 532,033            | 1,618,786                | 25             | 75             | 36                   | 15                   | 48               |
| 27                                      | Nonflats - medium gloss                        | 15,629,792                   | 522,186            | 15,107,606               | 3              | 97             | 48                   | 11                   | 40               |
| 28                                      | Nonflats - low gloss                           | 4,475,094                    | 34,373             | 4,440,720                | 1              | 99             | 44                   | 23                   | 32               |
| 29                                      | Nuclear  | 697                          | PD                 | PD                       | PD             | PD             | 3                    | 81                   | 16               |
| 30                                      | Pre-treatment wash primer                      | 71,940                       | PD                 | PD                       | PD             | PD             | 0                    | 0                    | 100              |
| 31                                      | Primers, Sealers, and Undercoaters             | 5,960,907                    | 1,515,383          | 4,445,524                | 25             | 75             | 41                   | 30                   | 29               |
| 32                                      | Quick dry - Enamels                            | 904,739                      | 904,739            | 0                        | 100            | NA             | 22                   | 4                    | 74               |
| 33                                      | Quick dry - Primers, Sealers, and Undercoaters | 1,912,915                    | 1,076,267          | 836,648                  | 56             | 44             | 65                   | 8                    | 27               |
| 34                                      | Repair and maintenance thermoplastic           | PD                           | PD                 | PD                       | 100            | <1             | <1                   | 0                    | 100              |
| 35                                      | Roof   | 2,909,432                    | 116,174            | 2,793,258                | 4              | 96             | 0                    | 100                  | <1               |
| 36                                      | Rust preventative                              | 63,099                       | PD                 | PD                       | PD             | PD             | 35                   | 1                    | 64               |
| 37                                      | Sanding sealers                                | 115,933                      | 110,767            | 5,166                    | 96             | 4              | 95                   | <1                   | 4                |
| 38                                      | Sealers  | 301,970                      | 57,890             | 244,080                  | 19             | 81             | 61                   | 26                   | 14               |
| 39                                      | Shellacs - clear                               | PD                           | PD                 | 0                        | 100            | 0              | 100                  | 0                    | 0                |
| 40                                      | Shellacs - opaque                              | PD                           | PD                 | 0                        | 100            | 0              | 10                   | 0                    | 90               |
| 41                                      | Stains - clear                                 | 173,109                      | 98,297             | 74,812                   | 57             | 43             | 31                   | 58                   | 9                |
| 42                                      | Stains - semitransparent                       | 1,268,677                    | 909,385            | 359,292                  | 72             | 28             | 32                   | 50                   | 18               |
| 43                                      | Stains - opaque                                | 1,519,190                    | 127,373            | 1,391,817                | 8              | 92             | <1                   | 99                   | 0                |
| 44                                      | Stains - lows solids                           | PD                           | 0                  | PD                       | 0              | 100            | 0                    | 100                  | 0                |
| 45                                      | Swimming pool - general                        | 3,492                        | PD                 | PD                       | PD             | PD             | 0                    | 50                   | 50               |
| 46                                      | Swimming pool - repair                         | 12,774                       | 12,774             | 0                        | 100            | 0              | 0                    | 99                   | 1                |
| 47                                      | Thermoplastic rubber and mastics               | PD                           | PD                 | PD                       | <1             | 100            | 0                    | 100                  | 0                |
| 48                                      | Traffic  | 2,883,370                    | 885,126            | 1,998,244                | 31             | 69             | 0                    | 99                   | 1                |
| 49                                      | Varnish - clear                                | 617,428                      | 445,397            | 172,031                  | 72             | 28             | 75                   | 13                   | 11               |
| 50                                      | Varnish - semitransparent                      | 162,209                      | 100,292            | 61,917                   | 62             | 38             | 92                   | 7                    | <1               |
| 51                                      | Waterproofing sealers - clear                  | 972,136                      | 568,589            | 403,546                  | 58             | 42             | 1                    | 93                   | 6                |
| 52                                      | Waterproofing sealers - opaque                 | 97,871                       | 47,767             | 50,104                   | 49             | 51             | <1                   | 10                   | 90               |
| 53                                      | Wood preservatives - below ground              | 3,549                        | PD                 | PD                       | PD             | PD             | 0                    | 100                  | 0                |
| 54                                      | Wood preservatives - clear                     | 224,242                      | 157,119            | 67,123                   | 70             | 30             | 0                    | 85                   | 15               |
| 55                                      | Wood preservatives - semitransparent           | 145,920                      | 138,757            | 7,163                    | 95             | 5              | 0                    | 30                   | 70               |
| 56                                      | Wood preservatives - opaque                    | PD                           | PD                 | PD                       | 2              | 98             | 0                    | 100                  | 0                |
| 57                                      | Wood preservatives - low solids                | PD                           | 0                  | PD                       | 0              | 100            | 0                    | 100                  | 0                |
| 58                                      | Other  | 205,081                      | 149,950            | 55,131                   | 73             | 27             | 10                   | 34                   | 56               |
|   | Other* (Aggregated categories not shown above) | 245,322                      | 402,335            | 408,156                  | NA             | NA             | NA                   | NA                   | NA               |
|   | Total (where applicable)                       | 87,495,639                   | 15,685,996         | 71,809,644               |                |                |                      |                      |                  |
| Legend:                                 |  |                              |                    |                          |                |                |                      |                      |                  |
| PD = Protected Data                     |  | SB = Solvent-borne           |                    | VOC req = VOC Regulatory |                |                |                      |                      |                  |
| NA = Not Applicable                     |  | WB = Water-borne             |                    | VOC act = VOC Actual     |                |                |                      |                      |                  |
| * = Sum of SB & WB does not equal total |  | SWA = Sales Weighted Average |                    |                          |                |                |                      |                      |                  |

**Table 6-1 Continued**  
**1998 Architectural Coatings Survey Summary (1996 Sales Data)**

| Category                 | Description                                    | Overall SWA VOC reg (g/l) | SWA SB VOC reg (g/l) | SWA WB VOC reg (g/l) | SWA SB VOC act (g/l) | SWA WB VOC act (g/l) | SWA Interior VOC reg (g/l) | SWA Exterior VOC reg (g/l) | SWA Dual VOC reg (g/l) |
|--------------------------|--|---------------------------|----------------------|----------------------|----------------------|----------------------|----------------------------|----------------------------|------------------------|
| <b>NO DATA SUBMITTED</b> |  |                           |                      |                      |                      |                      |                            |                            |                        |
| 1                        | Antenna  |                           |                      |                      |                      |                      |                            |                            |                        |
| 2                        | Anti-fouling                                   | 351                       | 351                  | NA                   | PD                   | NA                   | NA                         | 351                        | NA                     |
| 3                        | Anti-graffiti                                  | 225                       | 605                  | 92                   | PD                   | PD                   | NA                         | 409                        | 157                    |
| 4                        | Bituminous                                     | 47                        | 225                  | 3                    | 222                  | 2                    | NA                         | 48                         | 35                     |
| 5                        | Bond breakers                                  | 345                       | 750                  | 345                  | PD                   | PD                   | NA                         | 345                        | 750                    |
| 6                        | Chalkboard resurfacers                         | 220                       | NA                   | 220                  | NA                   | 115                  | 220                        | NA                         | NA                     |
| 7                        | Concrete curing compounds                      | 195                       | 677                  | 180                  | 677                  | 78                   | NA                         | NA                         | 195                    |
| 8                        | Dry Fog  | 252                       | 367                  | 182                  | 354                  | 114                  | 251                        | NA                         | 244                    |
| 9                        | Extreme high durability                        | 389                       | 390                  | NA                   | 390                  | NA                   | NA                         | NA                         | 389                    |
| 10                       | Fire retardant - clear                         | 22                        | NA                   | 22                   | NA                   | 18                   | 23                         | 0                          | NA                     |
| 11                       | Fire retardant - opaque                        | 86                        | 267                  | 46                   | 267                  | 30                   | 30                         | 89                         | 400                    |
| 12                       | Flats  | 98                        | 373                  | 98                   | 372                  | 40                   | 83                         | 105                        | 111                    |
| 13                       | Floor  | 157                       | 197                  | 164                  | 196                  | 79                   | 109                        | 207                        | 165                    |
| 14                       | Flow   |                           |                      |                      |                      |                      |                            |                            |                        |
| 15                       | Form release                                   | 34                        | 247                  | 2                    | 247                  | 2                    | NA                         | 725                        | 34                     |
| 16                       | Graphic arts (sign)                            | 122                       | 628                  | 10                   | PD                   | 4                    | 33                         | 625                        | 2                      |
| 17                       | Heat reactive                                  | 378                       | 378                  | NA                   | 337                  | NA                   | NA                         | NA                         | 378                    |
| 18                       | High temperature                               | 366                       | 367                  | 222                  | 365                  | 98                   | 314                        | 511                        | 312                    |
| 19                       | Industrial maintenance                         | 300                       | 321                  | 170                  | 320                  | 84                   | 169                        | 304                        | 306                    |
| 20                       | Lacquer - clear                                | 649                       | 665                  | 220                  | 645                  | 97                   | 650                        | 678                        | 233                    |
| 21                       | Lacquer - opaque                               | 545                       | 603                  | 157                  | 594                  | 82                   | 550                        | NA                         | 242                    |
| 22                       | Magnesite cement                               | 589                       | 590                  | 0                    | PD                   | PD                   | NA                         | 618                        | 582                    |
| 23                       | Mastic texture                                 | 118                       | 223                  | 79                   | PD                   | PD                   | 21                         | 127                        | 134                    |
| 24                       | Metallic pigmented                             | 358                       | 456                  | 137                  | 450                  | 49                   | 684                        | 361                        | 323                    |
| 25                       | Multi color                                    | 263                       | 520                  | 268                  | PD                   | PD                   | 337                        | NA                         | 177                    |
| 26                       | Nonflats - high gloss                          | 248                       | 366                  | 209                  | 366                  | 93                   | 194                        | 305                        | 266                    |
| 27                       | Nonflats - medium gloss                        | 155                       | 287                  | 151                  | 287                  | 61                   | 151                        | 142                        | 163                    |
| 28                       | Nonflats - low gloss                           | 134                       | 341                  | 133                  | 341                  | 59                   | 146                        | 108                        | 135                    |
| 29                       | Nuclear  | 50                        | 248                  | 46                   | PD                   | PD                   | 69                         | 46                         | 69                     |
| 30                       | Pre-treatment wash primer                      | 252                       | 716                  | 248                  | PD                   | PD                   | 785                        | 596                        | 252                    |
| 31                       | Primers, Sealers, and Undercoaters             | 170                       | 358                  | 106                  | 345                  | 41                   | 131                        | 201                        | 191                    |
| 32                       | Quick dry - Enamels                            | 403                       | 403                  | NA                   | 393                  | NA                   | 398                        | 392                        | 406                    |
| 33                       | Quick dry - Primers, Sealers, and Undercoaters | 303                       | 432                  | 136                  | 429                  | 70                   | 307                        | 137                        | 338                    |
| 34                       | Repair and maintenance thermoplastic           | 1                         | <1                   | 159                  | PD                   | PD                   | 159                        | NA                         | <1                     |
| 35                       | Roof   | 23                        | 259                  | 13                   | 256                  | 6                    | NA                         | 23                         | 323                    |
| 36                       | Rust preventative                              | 371                       | 382                  | 144                  | PD                   | PD                   | 404                        | 326                        | 353                    |
| 37                       | Sanding sealers                                | 648                       | 665                  | 281                  | 662                  | 61                   | 664                        | 555                        | 290                    |
| 38                       | Sealers  | 156                       | 422                  | 96                   | 422                  | 28                   | 71                         | 372                        | 133                    |
| 39                       | Shellacs - clear                               | 614                       | 614                  | NA                   | PD                   | NA                   | 614                        | NA                         | NA                     |
| 40                       | Shellacs - opaque                              | 534                       | 534                  | NA                   | PD                   | NA                   | 510                        | NA                         | 537                    |
| 41                       | Stains - clear                                 | 285                       | 407                  | 124                  | 407                  | 21                   | 282                        | 301                        | 203                    |
| 42                       | Stains - semitransparent                       | 401                       | 453                  | 267                  | 452                  | 114                  | 543                        | 334                        | 331                    |
| 43                       | Stains - opaque                                | 157                       | 370                  | 138                  | 368                  | 56                   | 711                        | 157                        | NA                     |
| 44                       | Stains - lows solids                           | 77                        | NA                   | 77                   | NA                   | PD                   | NA                         | 77                         | NA                     |
| 45                       | Swimming pool - general                        | 406                       | 438                  | 147                  | PD                   | PD                   | NA                         | 563                        | 247                    |
| 46                       | Swimming pool - repair                         | 569                       | 569                  | NA                   | 569                  | NA                   | NA                         | 569                        | 530                    |
| 47                       | Thermoplastic rubber and mastics               | 75                        | 492                  | 75                   | PD                   | PD                   | NA                         | 75                         | NA                     |
| 48                       | Traffic  | 154                       | 290                  | 124                  | 256                  | 74                   | 287                        | 155                        | 121                    |
| 49                       | Varnish - clear                                | 406                       | 463                  | 260                  | 462                  | 102                  | 418                        | 393                        | 339                    |
| 50                       | Varnish - semitransparent                      | 396                       | 459                  | 296                  | 459                  | 118                  | 396                        | 394                        | 529                    |
| 51                       | Waterproofing sealers - clear                  | 347                       | 360                  | 330                  | 360                  | 57                   | 329                        | 350                        | 301                    |
| 52                       | Waterproofing sealers - opaque                 | 219                       | 330                  | 124                  | 330                  | 70                   | 160                        | 38                         | 239                    |
| 53                       | Wood preservatives - below ground              | 352                       | 352                  | 350                  | PD                   | PD                   | NA                         | 352                        | NA                     |
| 54                       | Wood preservatives - clear                     | 129                       | 142                  | 102                  | 142                  | 44                   | NA                         | 75                         | 423                    |
| 55                       | Wood preservatives - semitransparent           | 382                       | 390                  | 218                  | 390                  | 43                   | NA                         | 247                        | 439                    |
| 56                       | Wood preservatives - opaque                    | 140                       | 658                  | 132                  | 658                  | 45                   | NA                         | 140                        | NA                     |
| 57                       | Wood preservatives - low solids                | 42                        | NA                   | 42                   | NA                   | PD                   | NA                         | 42                         | NA                     |
| 58                       | Other  | 239                       | 304                  | 62                   | 341                  | 26                   | 389                        | 131                        | 278                    |
|                          | Other* (Aggregated categories not shown above) | NA                        | NA                   | NA                   | NA                   | NA                   | NA                         | NA                         | NA                     |
|                          | Total (where applicable)                       |                           |                      |                      |                      |                      |                            |                            |                        |
|                          |  |                           |                      |                      |                      |                      |                            |                            |                        |
|                          |  |                           |                      |                      |                      |                      |                            |                            |                        |
|                          |  |                           |                      |                      |                      |                      |                            |                            |                        |
|                          |  |                           |                      |                      |                      |                      |                            |                            |                        |

**Table 6-1 Continued**

| Category                 | Description                                    | SWA SB % by Volume Solids | SWA WB % by Volume Solids | SWA Density SB (g/l) | SWA Density WB (g/l) | SB Emissions (TPY) | WB Emissions (TPY) | Total Emissions (TPY) |        |
|--------------------------|--|---------------------------|---------------------------|----------------------|----------------------|--------------------|--------------------|-----------------------|--------|
| 1                        | Antenna  | <b>NO DATA SUBMITTED</b>  |                           |                      |                      |                    |                    |                       |        |
| 2                        | Anti-fouling                                   | 59                        | NA                        | 1,994                | NA                   | 2                  | 0                  | 2                     |        |
| 3                        | Anti-graffiti                                  | 32                        | 26                        | 977                  | 989                  | 2                  | <1                 | 2                     |        |
| 4                        | Bituminous                                     | 74                        | 47                        | 1,061                | 1,098                | 919                | 25                 | 944                   |        |
| 5                        | Bond breakers                                  | 1                         | 11                        | 754                  | 968                  | <1                 | 12                 | 12                    |        |
| 6                        | Chalkboard resurfacers                         | NA                        | 41                        | NA                   | 1,140                | 0                  | <1                 | <1                    |        |
| 7                        | Concrete curing compounds                      | 20                        | 22                        | 878                  | 1,019                | 33                 | 129                | 163                   |        |
| 8                        | Dry Fog  | 51                        | 36                        | 1,343                | 1,316                | 113                | 60                 | 173                   |        |
| 9                        | Extreme high durability                        | 51                        | NA                        | 1,198                | NA                   | 35                 | 0                  | 35                    |        |
| 10                       | Fire retardant - clear                         | NA                        | 42                        | NA                   | 1,454                | 0                  | <1                 | <1                    |        |
| 11                       | Fire retardant - opaque                        | 72                        | 56                        | 1,221                | 1,386                | 11                 | 6                  | 17                    |        |
| 12                       | Flats  | 51                        | 35                        | 1,369                | 1,334                | 43                 | 5,267              | 5,310                 |        |
| 13                       | Floor  | 77                        | 34                        | 1,133                | 1,188                | 305                | 216                | 522                   |        |
| 14                       | Flow   | <b>NO DATA SUBMITTED</b>  |                           |                      |                      |                    |                    |                       |        |
| 15                       | Form release                                   | 12                        | 0                         | 960                  | 927                  | 11                 | <1                 | 12                    |        |
| 16                       | Graphic arts (sign)                            | 20                        | 35                        | 986                  | 1,070                | 20                 | <1                 | 20                    |        |
| 17                       | Heat reactive                                  | 46                        | NA                        | 1,237                | NA                   | 1                  | 0                  | 1                     |        |
| 18                       | High temperature                               | 57                        | 33                        | 1,336                | 6,226                | 35                 | <1                 | 35                    |        |
| 19                       | Industrial maintenance                         | 62                        | 35                        | 1,279                | 1,303                | 5,070              | 132                | 5,203                 |        |
| 20                       | Lacquer - clear                                | 20                        | 31                        | 919                  | 1,046                | 1,200              | 7                  | 1,207                 |        |
| 21                       | Lacquer - opaque                               | 25                        | 36                        | 1,055                | 1,192                | 447                | 9                  | 456                   |        |
| 22                       | Magnesite cement                               | 27                        | 4                         | 896                  | 1,010                | 92                 | <1                 | 92                    |        |
| 23                       | Mastic texture                                 | 53                        | 51                        | 722                  | 1,354                | 55                 | 43                 | 98                    |        |
| 24                       | Metallic pigmented                             | 45                        | 31                        | 1,565                | 2,161                | 513                | 25                 | 538                   |        |
| 25                       | Multi color                                    | 27                        | 28                        | 1,144                | 1,067                | 3                  | 24                 | 27                    |        |
| 26                       | Nonflats - high gloss                          | 53                        | 35                        | 1,079                | 1,152                | 813                | 626                | 1,439                 |        |
| 27                       | Nonflats - medium gloss                        | 64                        | 36                        | 1,218                | 1,188                | 625                | 3,852              | 4,477                 |        |
| 28                       | Nonflats - low gloss                           | 56                        | 36                        | 1,242                | 1,233                | 49                 | 1,096              | 1,145                 |        |
| 29                       | Nuclear  | 49                        | 38                        | 2,118                | 1,140                | <1                 | <1                 | <1                    |        |
| 30                       | Pre-treatment wash primer                      | 10                        | 49                        | 876                  | 1,204                | 2                  | 29                 | 31                    |        |
| 31                       | Primers, Sealers, and Undercoaters             | 52                        | 32                        | 1,277                | 1,262                | 2,161              | 766                | 2,927                 |        |
| 32                       | Quick dry - Enamels                            | 50                        | NA                        | 1,117                | NA                   | 1,485              | 0                  | 1,485                 |        |
| 33                       | Quick dry - Primers, Sealers, and Undercoaters | 45                        | 41                        | 1,195                | 1,241                | 1,929              | 243                | 2,172                 |        |
| 34                       | Repair and maintenance thermoplastic           | 100                       | 35                        | 1,075                | 1,396                | <1                 | <1                 | <1                    |        |
| 35                       | Roof   | 67                        | 44                        | 1,137                | 1,276                | 124                | 73                 | 197                   |        |
| 36                       | Rust preventative                              | 48                        | 39                        | 1,284                | 1,255                | 96                 | 1                  | 97                    |        |
| 37                       | Sanding sealers                                | 19                        | 16                        | 862                  | 1,022                | 306                | 1                  | 307                   |        |
| 38                       | Sealers  | 36                        | 30                        | 885                  | 1,074                | 99                 | 28                 | 128                   |        |
| 39                       | Shellacs - clear                               | 26                        | NA                        | 907                  | NA                   | 75                 | 0                  | 75                    |        |
| 40                       | Shellacs - opaque                              | 31                        | NA                        | 1,197                | NA                   | 271                | 0                  | 271                   |        |
| 41                       | Stains - clear                                 | 48                        | 17                        | 862                  | 1,015                | 167                | 7                  | 174                   |        |
| 42                       | Stains - semitransparent                       | 42                        | 25                        | 920                  | 1,084                | 1,716              | 171                | 1,887                 |        |
| 43                       | Stains - opaque                                | 52                        | 34                        | 1,147                | 1,231                | 196                | 327                | 522                   |        |
| 44                       | Stains - lows solids                           | NA                        | 8                         | NA                   | 1,020                | 0                  | 3                  | 3                     |        |
| 45                       | Swimming pool - general                        | 49                        | 47                        | 1,480                | 1,598                | 6                  | <1                 | 6                     |        |
| 46                       | Swimming pool - repair                         | 29                        | NA                        | 1,177                | NA                   | 30                 | 0                  | 30                    |        |
| 47                       | Thermoplastic rubber and mastics               | 44                        | 49                        | 931                  | 1,271                | <1                 | 1                  | 1                     |        |
| 48                       | Traffic  | 51                        | 56                        | 1,371                | 1,399                | 723                | 616                | 1,340                 |        |
| 49                       | Varnish - clear                                | 43                        | 29                        | 901                  | 1,047                | 859                | 73                 | 932                   |        |
| 50                       | Varnish - semitransparent                      | 43                        | 29                        | 916                  | 1,032                | 192                | 31                 | 222                   |        |
| 51                       | Waterproofing sealers - clear                  | 54                        | 11                        | 901                  | 1,028                | 852                | 96                 | 948                   |        |
| 52                       | Waterproofing sealers - opaque                 | 43                        | 48                        | 1,208                | 1,306                | 63                 | 15                 | 78                    |        |
| 53                       | Wood preservatives - below ground              | 55                        | 10                        | 850                  | 1,070                | 4                  | 1                  | 5                     |        |
| 54                       | Wood preservatives - clear                     | 84                        | 47                        | 864                  | 1,247                | 93                 | 12                 | 105                   |        |
| 55                       | Wood preservatives - semitransparent           | 56                        | 16                        | 876                  | 1,021                | 226                | 1                  | 227                   |        |
| 56                       | Wood preservatives - opaque                    | 17                        | 28                        | 820                  | 1,185                | <1                 | <1                 | <1                    |        |
| 57                       | Wood preservatives - low solids                | NA                        | 7                         | NA                   | 1,067                | 0                  | 1                  | 1                     |        |
| 58                       | Other  | 57                        | 35                        | 1,039                | 1,175                | 190                | 6                  | 196                   |        |
|                          | Other* (Aggregated categories not shown above) | NA                        | NA                        | NA                   | NA                   | <1                 | 4                  | <1                    |        |
| Total (where applicable) |  |                           |                           |                      |                      |                    | 22,265             | 14,036                | 36,300 |

## Chapter 7 - Speciation Profiles

The 1998 Architectural Coatings Survey, in contrast to past surveys, collected ingredient data in addition to sales and VOC content information for the 58 coating categories. We received data representing over 3,000 distinct ingredients. Listing all the ingredients was considered impractical and not consistent with our effort to maintain confidentiality. To maintain confidentiality three or more companies ("Three Company Rule") must be using the ingredients shown in Tables 7-1, 7-2, and 7-3. Given the magnitude of ingredient data, like compounds were aggregated under common names and all the ingredients are ranked in descending order by mass. Table 7-1 summarizes ingredients in architectural coatings overall, while Tables 7-2 and 7-3 provide the ingredients in solvent-borne and water-borne coatings respectively. While it was our intent to provide species profiles by category, it was determined that this approach limited our ability to display as much of the data as possible while maintaining confidentiality.

The survey questionnaire (see Appendix A) provided two options for reporting ingredient information. Respondents could choose to use survey Form III, which required a listing of all coating ingredients that individually amount to 1.0% or greater by weight of the final product. Remaining ingredients that individually accounted for less than 1.0% of the final product would be aggregated under "Aggregated Ingredients <1.0%." Survey Form IV provided an abbreviated approach to Form III in which the respondent would identify VOCs and Exempt Compounds only that individually amount to 1.0% or greater by weight of the final product. Any VOCs or Exempt Compounds that individually accounted for less than 1.0% of the final product could be aggregated. Remaining ingredients were entered under "All Other". Approximately one-third of the survey respondents used survey Form III, while the rest used survey Form IV. Tables 7-1, 7-2, and 7-3 represent both survey Forms III and IV.

Since Tables 7-1 through 7-3 reflect both survey Forms III and IV, features of both Forms are present. For example, "All Other", a feature of survey Form IV, and "Aggregated Ingredients <1.0%" a feature of Form III, both appear in all three tables. In all these tables, ingredient data not being used by three or more companies were aggregated under "Aggregated Protected Data".

The Air Resources Board plans to use these species profiles in our ongoing effort to examine the future potential of reactivity based standards for architectural coatings. These profiles will also aid our emission modeling programs, which take into account photochemical reactivity. We consider the information contained in Tables 7-1, 7-2, and 7-3 to be simply a snapshot of what was reported in the 1998 survey questionnaire, and we will continue to refine and update these data. We have not categorized the compounds as VOCs, non-VOCs, or solids, in order to allow the public to see the most data possible.

**Table 7-1**  
**Architectural Coatings Speciation Profile – Overall**  
**(Ranked by Mass)**

| Item # | Name                                      | Item # | Name                               |
|--------|---|--------|------------------------------------|
| 1      | All Other                                 | 47     | attapulgite                        |
| 2      | water                                     | 48     | 2-(2-methoxyethoxy)ethanol         |
| 3      | Aggregated Protected Data                 | 49     | n-butanol                          |
| 4      | calcium carbonate                         | 50     | diatomaceous earth                 |
| 5      | titanium dioxide                          | 51     | methyl isobutyl ketone             |
| 6      | medium aliphatic solvent naphtha          | 52     | propylene glycol monomethyl        |
| 7      | asphalt fumes (petroleum)                 | 53     | solvent-refined heavy paraffinic   |
| 8      | 2,2,4-trimethyl-1,3-pentanediol           | 54     | distillate                         |
|        | isobutyrate                               | 55     | chlorinated paraffin               |
| 9      | propylene glycol                          | 56     | silica (crystalline-cristobalite)  |
| 10     | stoddard solvent                          | 57     | iodopropynyl butylcarbamate        |
| 11     | ethylene glycol                           | 58     | dipropylene glycol methyl ether    |
| 12     | talc                                      | 59     | zinc oxide                         |
| 13     | Aggregated VOCs < 1.0%                    | 60     | ethyl benzene                      |
| 14     | vm & painters naphtha                     | 61     | mica                               |
| 15     | epon 1001 resin                           | 62     | naphtha                            |
| 16     | petroleum naphtha, heavy alkylate         | 63     | diatomaceous silica, flux-calcined |
| 17     | xylenes                                   | 64     | heavy aromatic naphtha solvent     |
| 18     | aromatic 100                              | 65     | chlorafin                          |
| 19     | kaolin                                    | 66     | ammonium hydroxide                 |
| 20     | distillate(petroleum), hydrotreated light | 67     | amorphous silica                   |
| 21     | Aggregate Ingredients < 1.0%              | 68     | 2,2'-oxybisethanol                 |
| 22     | toluene                                   | 69     | Volatile Methyl Siloxanes          |
| 23     | 2-propenoic acid, butyl ester, polymer    | 70     | aqualyte (TM), LSC cocktail        |
|        | with ethenyl acetate                      | 71     | ethyl 3-ethoxypropionate           |
| 24     | methyl ethyl ketone                       | 72     | 2-propoxyethanol                   |
| 25     | 2-(2-butoxyethoxy)ethanol                 | 73     | styrene                            |
| 26     | sand                                      | 74     | ammonia                            |
| 27     | limestone                                 | 75     | isobutyl isobutyrate               |
| 28     | ethyl alcohol                             | 76     | dipropylene glycol                 |
| 29     | butyl acetate                             | 77     | sodium silicoaluminate             |
| 30     | methanol                                  | 78     | aluminum                           |
| 31     | 1,1,1-trichloroethane                     | 79     | wollastonite                       |
| 32     | hydrotreated heavy naphtha                | 80     | propylene glycol monomethyl ether  |
| 33     | vinyl acetate                             | 81     | acetate                            |
| 34     | kerosene                                  | 82     | meta-xylene                        |
| 35     | petroleum ether                           | 83     | polypropylene glycol               |
| 36     | oil of linseed                            | 84     | barium boron oxide                 |
| 37     | aluminum silicate                         | 85     | mesitylene                         |
| 38     | fibrous glass filter media                | 86     | 2-amino-2-methyl-1-propanol        |
| 39     | 2-propanol                                | 87     | butene, homopolymer                |
| 40     | 2-butoxy ethanol                          | 88     | hydroxyethyl cellulose             |
| 41     | naphtha, petroleum, light steam-cracked   | 89     | 2-methyl-1-propanol                |
|        | arom., piperylene conc., polymd.          | 90     | 2-(2-butoxyethoxy)ethyl acetate    |
| 42     | isobutyl acetate                          | 91     | aluminum oxide                     |
| 43     | 2,2'-(1-methylethylidene)bis(4,1-         | 92     | 1,6-hexamethylene diisocyanate     |
|        | phenyleneoxymethylene)]bisoxirane         | 93     | homopolymer                        |
|        | homopolymer                               |        | barium sulfate                     |
| 44     | 1,3,4-trimethylbenzene                    |        | 2-methyl-2,4-pentanediol           |
| 45     | acetone                                   |        | triethylenetetramine               |
| 46     | methyl n-amyl ketone                      |        |                                    |

**Table 7-1** Continued

| Item # | Name  | Item # | Name  |
|--------|---|--------|---|
| 94     | solvent naphtha, petroleum, heavy aliph.  | 140    | tergitol np-33  |
| 95     | 2-propanol, 1-(2-butoxy-1-methylethoxy)-  | 141    | chlorothalonil  |
| 96     | benzyl alcohol  | 142    | silicon dioxide, amorphous  |
| 97     | 2-pentanone   | 143    | 1-butanol, 2-methyl-, acetate   |
| 98     | ferric oxide  | 144    | triethanolamine   |
| 99     | pine oil  | 145    | limonene  |
| 100    | carbon black  | 146    | vinyl toluene   |
| 101    | ethyl methyl ketone oxime   | 147    | tri(butyl cellosolve) phosphate   |
| 102    | collodion   | 148    | 2-ethoxyethyl acetate   |
| 103    | phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[{(1-methylethylidene)bis(4,1-phenyleneoxymethylene)}]bis[oxirane] | 149    | troysan 174   |
| 104    | 1-methyl-2-pyrrolidinone  | 150    | cumene  |
| 105    | isophorone diamine  | 151    | 2,4-pentanedione  |
| 106    | Triton(R) X-100   | 152    | paraffin  |
| 107    | tung oil  | 153    | cobalt 2-ethylhexanoate   |
| 108    | zinc phosphate  | 154    | zinc  |
| 109    | heavy straight-run naphtha  | 155    | Aggregated Exempt Compounds <1.0%   |
| 110    | portland cement   | 156    | tetraethyl orthosilicate  |
| 111    | Magnesium Aluminum Silicate   | 157    | methyl isobutyl carbinol  |
| 112    | 2-methoxy-1-propanol acetate  | 158    | castor oil  |
| 113    | 4-chlorobenzotrifluoride  | 159    | n-propyl acetate  |
| 114    | butyl benzyl phthalate  | 160    | sodium polyacrylate   |
| 115    | ethylmethylbenzene  | 161    | dibutyl phthalate   |
| 116    | stearic acid  | 162    | formaldehyde  |
| 117    | 2-butoxyethyl acetate   | 163    | n-propanol  |
| 118    | sec-butyl alcohol   | 164    | siloxanes and silicones, di-me, reaction products with silica                               |
| 119    | propylene glycol monopropyl ether   | 165    | n,n-dimethylethanolamine  |
| 120    | zirconium 2-ehtylhexanoate  | 166    | poloxanlene   |
| 121    | 4-nonylphenol (branched)  | 167    | quaternary ammonium compounds, bis(hydrogenated tallow alkyl)dimethyl, salts with bentonite |
| 122    | propylene carbonate   | 168    | triethyl amine  |
| 123    | 1-butoxy-2-propanol   | 169    | soybean lecithin  |
| 124    | epikote 862   | 170    | cellulose   |
| 125    | scintillation surfactant  | 171    | tris(dimethylaminomethyl)phenol   |
| 126    | hexane  | 172    | calcium 2-ethylhexanoate  |
| 127    | n-heptane   | 173    | di-sec-octyl phthalate  |
| 128    | methylene diphenyl diisocyanate   | 174    | di-n-butyltin dilaurate   |
| 129    | aluminum hydroxide  | 175    | acetic acid   |
| 130    | iron oxide  | 176    | Polyethylene  |
| 131    | 2-(2-ethoxyethoxy)ethanol   | 177    | aluminum phosphate  |
| 132    | triposphoric acid, pentapotassium salt  | 178    | 2,6-dimethyl-4-heptanone  |
| 133    | ethyl acetate   | 179    | Zinc Chromate   |
| 134    | methyl methacrylate   | 180    | silica, amorphous   |
| 135    | naphthalene   | 181    | phosphoric acid   |
| 136    | amyl acetate  | 182    | furfuryl alcohol  |
| 137    | styrene-butadiene copolymers  | 183    | C.I. pigment yellow 42  |
| 138    | cyclohexanone   | 184    | 2-ethyl-1-hexanol   |
| 139    | 4-hydroxy-4-methyl-2-pentanone  | 185    | 2-phenoxyethanol  |
|        |   | 186    | tetraethylenepentamine  |

**Table 7-2**  
 Architectural Coatings Speciation Profile - Solvent-borne  
 (Ranked by Mass)

| Item # | Name                                      | Item # | Name                                   |
|--------|---|--------|--|
| 1      | All Other                                 | 52     | propylene glycol monomethyl ether      |
| 2      | Aggregated Protected Data                 |        | acetate                                |
| 3      | medium aliphatic solvent naphtha          | 53     | aluminum silicate                      |
| 4      | stoddard solvent                          | 54     | mesitylene                             |
| 5      | calcium carbonate                         | 55     | 2-methyl-1-propanol                    |
| 6      | talc                                      | 56     | butene, homopolymer                    |
| 7      | vm & painters naphtha                     | 57     | mica                                   |
| 8      | epon 1001 resin                           | 58     | aluminum oxide                         |
| 9      | titanium dioxide                          | 60     | 1,6-hexamethylene diisocyanate         |
| 10     | petroleum naphtha, heavy alkylate         |        | homopolymer                            |
| 11     | xylenes                                   | 61     | methanol                               |
| 12     | aromatic 100                              | 62     | diatomaceous silica, flux-calcined     |
| 13     | toluene                                   | 63     | triethylenetetramine                   |
| 14     | distillate(petroleum), hydrotreated light | 64     | meta-xylene                            |
| 15     | water                                     | 65     | solvent naphtha, petroleum, heavy      |
| 16     | methyl ethyl ketone                       |        | aliph.                                 |
| 17     | sand                                      | 66     | benzyl alcohol                         |
| 18     | ethyl alcohol                             | 67     | amorphous silica                       |
| 19     | butyl acetate                             | 68     | 2-pentanone                            |
| 20     | Aggregated VOCs < 1.0%                    | 69     | barium sulfate                         |
| 21     | 1,1,1-trichloroethane                     | 70     | 2-propoxyethanol                       |
| 22     | hydrotreated heavy naphtha                | 71     | ferric oxide                           |
| 23     | kerosene                                  | 72     | pine oil                               |
| 24     | petroleum ether                           | 73     | carbon black                           |
| 25     | oil of linseed                            | 74     | collodion                              |
| 26     | fibrous glass filter media                | 75     | phenol, 4,4'-(1-methylethylidene)bis-, |
| 27     | 2-propanol                                |        | polymer with 2,2'-(1-                  |
| 28     | naphtha, petroleum, light steam-cracked   |        | methylethylidene)bis(4,1-              |
|        | arom., piperylene conc., polymd.          |        | phenyleneoxymethylene)]bis[oxirane]    |
| 29     | isobutyl acetate                          | 76     | ethyl methyl ketone oxime              |
| 30     | acetone                                   | 77     | isophorone diamine                     |
| 31     | 1,3,4-trimethylbenzene                    | 78     | tung oil                               |
| 32     | methyl n-amyl ketone                      | 79     | zinc phosphate                         |
| 33     | attapulgite                               | 80     | portland cement                        |
| 34     | Aggregate Ingredients < 1.0%              | 81     | heavy straight-run naphtha             |
| 35     | limestone                                 | 82     | styrene                                |
| 36     | methyl isobutyl ketone                    | 83     | 2-methoxy-1-propanol acetate           |
| 37     | n-butanol                                 | 84     | ethylmethylbenzene                     |
| 38     | 2-butoxy ethanol                          | 85     | 2-butoxyethyl acetate                  |
| 40     | propylene glycol monomethyl               | 86     | zinc oxide                             |
| 41     | kaolin                                    | 87     | 2,2,4-trimethyl-1,3-pentanediol        |
| 42     | chlorinated paraffin                      |        | isobutyrate                            |
| 43     | asphalt fumes (petroleum)                 | 88     | 2,2'-oxybisethanol                     |
| 44     | ethyl benzene                             | 89     | zirconium 2-ethylhexanoate             |
| 45     | naphtha                                   | 90     | dipropylene glycol methyl ether        |
| 46     | heavy aromatic naphtha solvent            | 91     | 4-nonylphenol (branched)               |
| 47     | chlorafin                                 | 92     | propylene carbonate                    |
| 49     | ethyl 3-ethoxypropionate                  | 93     | epikote 862                            |
| 50     | aqualyte (TM), LSC cocktail               | 94     | aluminum                               |
| 51     | isobutyl isobutyrate                      | 95     | n-heptane                              |

**Table 7-2** Continued

| Item # | Name  |
|--------|---|
| 96     | barium boron oxide                          |
| 97     | methylene diphenyl diisocyanate             |
| 98     | aluminum hydroxide                          |
| 99     | ethyl acetate                               |
| 100    | naphthalene                                 |
| 101    | amyl acetate                                |
| 102    | cyclohexanone                               |
| 103    | magnesium aluminum silicate                 |
| 104    | silicon dioxide, amorphous                  |
| 105    | 1-butanol, 2-methyl-, acetate               |
| 106    | 4-hydroxy-4-methyl-2-pentanone              |
| 107    | iron oxide                                  |
| 108    | 2-(2-butoxyethoxy)ethanol                   |
| 109    | ethylene glycol                             |
| 110    | limonene                                    |
| 111    | vinyl toluene                               |
| 112    | 2-ethoxyethyl acetate                       |
| 113    | cumene                                      |
| 114    | 2,4-pentanedione                            |
| 115    | wollastonite                                |
| 116    | propylene glycol monopropyl ether           |
| 117    | propylene glycol                            |
| 118    | paraffin                                    |
| 119    | 2-(2-methoxyethoxy)ethanol                  |
| 120    | zinc  |
| 121    | cobalt 2-ethylhexanoate                     |
| 122    | methyl isobutyl carbinol                    |
| 123    | castor oil                                  |
| 124    | n-propyl acetate                            |
| 125    | tetraethyl orthosilicate                    |
| 126    | n-propanol                                  |
| 127    | Volatile Methyl Siloxanes                   |
| 129    | sodium silicoaluminate                      |
| 130    | Aggregated Exempt Compounds <1.0%           |
| 131    | soybean lecithin                            |
| 132    | tris(dimethylaminomethyl)phenol             |
| 133    | calcium 2-ethylhexanoate                    |
| 134    | di-sec-octyl phthalate                      |
| 135    | di-n-butyltin dilaurate                     |
| 136    | 2,6-dimethyl-4-heptanone                    |
| 137    | Zinc Chromate                               |
| 138    | hexane                                      |
| 139    | phosphoric acid                             |
| 140    | furfuryl alcohol                            |
| 141    | 2-methyl-2,4-pentanediol                    |
| 142    | silica, amorphous                           |
| 143    | solvent-refined heavy paraffinic distillate |
| 144    | C.I. pigment yellow 42                      |
| 145    | aluminum phosphate                          |
| 146    | 2-ethyl-1-hexanol                           |

**Table 7-3**  
**Architectural Coatings Speciation Profile - Water-borne**  
**(Ranked by Mass)**

| Item # | Name  | Item # | Name  |
|--------|---|--------|---|
| 1      | water   | 48     | 2-methyl-2,4-pentanediol                        |
| 2      | All Other   | 49     | vm & painters naphtha                           |
| 3      | Aggregated Protected Data                                   | 50     | 2-propanol, 1-(2-butoxy-1-methylethoxy)-toluene |
| 4      | calcium carbonate   | 51     | 1-methyl-2-pyrrolidinone                        |
| 5      | titanium dioxide  | 52     | propylene glycol monomethyl n-butanol           |
| 6      | 2,2,4-trimethyl-1,3-pentanediol isobutyrate                 | 53     | Triton(R) X-100                                 |
| 7      | asphalt fumes (petroleum)                                   | 54     | butyl benzyl phthalate                          |
| 8      | propylene glycol  | 55     | sec-butyl alcohol                               |
| 9      | ethylene glycol   | 56     | 2-propanol                                      |
| 10     | Aggregated VOCs < 1.0%                                      | 57     | magnesium aluminum silicate                     |
| 11     | kaolin  | 58     | 1-butoxy-2-propanol                             |
| 12     | Aggregate Ingredients <1.0%                                 | 59     | petroleum naphtha, heavy alkylate               |
| 13     | 2-propenoic acid, butyl ester, polymer with ethenyl acetate | 60     | barium sulfate                                  |
| 14     | 2-(2-butoxyethoxy)ethanol                                   | 61     | scintillation surfactant                        |
| 15     | talc  | 62     | propylene glycol monopropyl ether               |
| 16     | methanol  | 63     | triposphoric acid, pentapotassium salt          |
| 17     | limestone   | 64     | 2-(2-ethoxyethoxy)ethanol                       |
| 18     | vinyl acetate   | 65     | xylenes   |
| 19     | medium aliphatic solvent naphtha                            | 66     | 1,3,4-trimethylbenzene                          |
| 20     | aluminum silicate   | 67     | tergitol np-33                                  |
| 21     | distillate(petroleum), hydrotreated light                   | 68     | triethanolamine                                 |
| 22     | 2-(2-methoxyethoxy)ethanol                                  | 69     | chlorothalonil                                  |
| 23     | diatomaceous earth  | 70     | tri(butyl cellosolve) phosphate                 |
| 24     | 2-butoxy ethanol  | 71     | troysan 174                                     |
| 25     | solvent-refined heavy paraffinic distillate                 | 72     | sodium polyacrylate                             |
| 26     | silica (crystalline-cristobalite)                           | 73     | dibutyl phthalate                               |
| 27     | iodopropynyl butylcarbamate                                 | 74     | Aggregated Exempt Compounds <1.0%               |
| 28     | dipropylene glycol methyl ether                             | 75     | n,n-dimethylethanolamine                        |
| 29     | zinc oxide  | 76     | triethyl amine                                  |
| 30     | sand  | 77     | ethyl alcohol                                   |
| 31     | ammonium hydroxide  | 78     | zinc phosphate                                  |
| 32     | mica  | 79     | heavy aromatic naphtha solvent                  |
| 33     | 2,2'-oxybisethanol  | 80     | acetic acid                                     |
| 34     | Volatile Methyl Siloxanes                                   | 81     | aluminum phosphate                              |
| 35     | diatomaceous silica, flux-calcined                          | 82     | carbon black                                    |
| 36     | ammonia   | 83     | 2-ethyl-1-hexanol                               |
| 37     | amorphous silica  | 84     | benzyl alcohol                                  |
| 38     | dipropylene glycol  | 85     | propylene glycol monomethyl ether               |
| 39     | stoddard solvent  | 86     | acetate   |
| 40     | sodium silicoaluminate                                      | 87     | 2-methyl-1-propanol                             |
| 41     | wollastonite  |        |   |
| 42     | 2-propoxyethanol  |        |   |
| 43     | 2-amino-2-methyl-1-propanol                                 |        |   |
| 44     | hydroxyethyl cellulose                                      |        |   |
| 45     | aromatic 100  |        |   |
| 46     | barium boron oxide  |        |   |
| 47     | epon 1001 resin   |        |   |

## Chapter 8 – 1993 / 1998 Survey Comparison

This section compares, where possible, the data from the ARB's 1993 survey of 1990 data with the 1998 survey data. Appendix B contains relevant excerpts of the 1993 survey results. Table 8-1 presents a comparison of some overall data between the two surveys. The emissions figures in this table do include emissions from thinning and clean-up, which are calculated by assuming one pint of a solvent with a density of 6.4 pounds per gallon is used per gallon of solvent-borne coatings. Using the 1998 survey data, emissions from thinning and clean-up in 1996 amount to about 17 tons of VOC per day. Using the 1993 survey data, those emissions in 1990 were about 20 tons per day.

**Table 8-1**  
**Comparison of ARB's 1998 and 1993**  
**Overall Architectural Coatings Survey Data**

|   | 1993 Survey<br>(1990 Sales) |     | 1998 Survey<br>(1996 Sales) |     | Percent<br>Change |       |
|---|-----------------------------|-----|-----------------------------|-----|-------------------|-------|
| Total volume reported (gallons)                           | 77.1 million                |     | 87.5 million                |     | +13.5%            |       |
| Water-borne/solvent-borne split by volume                 | 76%                         | 24% | 82%                         | 18% | +22.4             | -14.9 |
| Total estimated annual average emissions <sup>1</sup>     | 126 TPD <sup>2</sup>        |     | 117 TPD                     |     | -7.2%             |       |
| Water-borne/solvent-borne split by emissions <sup>1</sup> | 28%                         | 72% | 33%                         | 67% | +9.4              | -13.6 |
| Volume per capita (gallons per capita)                    | 2.6                         |     | 2.7                         |     | +3.9%             |       |
| Emissions per capita <sup>1</sup> (pounds per capita)     | 3.1                         |     | 2.6                         |     | -16.1%            |       |

*1 These emission estimates include emissions from thinning and clean-up.*

*2 This is a 1990 value. For comparison purposes, ARB's emissions inventory estimates emissions of 128 TPD in 1996.*

Tables 8-2, 8-3, and 8-4 are a detailed comparison of sales, emissions, and sales-weighted average VOC<sub>regulatory</sub> contents from the 1993 and 1998 surveys by category. Data not complying with the “Three Company Rule” have been excluded.

**Table 8-2**

| Category                                     | Overall Totals   |            |          |                           |        |          |  |      |          |
|--|------------------|------------|----------|---------------------------|--------|----------|--|------|----------|
|  | Volume (gallons) |            |          | Emissions (tons per year) |        |          | Sales Weighted Average VOC<br>regulatory |      |          |
|  | 1993             | 1998       | % Change | 1993                      | 1998   | % Change | 1993                                     | 1998 | % Change |
| Anti-graffiti                                | 38,000           | 2,500      | -93      | 14                        | 2      | -86      | 135                                      | 225  | 67       |
| Concrete curing compounds                    | 197,000          | 411,000    | 109      | 112                       | 163    | 46       | 217                                      | 195  | -10      |
| Dry fog                                      | 105,000          | 203,000    | 93       | 130                       | 173    | 33       | 320                                      | 252  | -21      |
| Fire retardant, opaque                       | 23,000           | 56,200     | 144      | 25                        | 17     | -32      | 267                                      | 86   | -68      |
| Flats  | 32,177,000       | 31,829,000 | -1       | 5,977                     | 5,310  | -11      | 105                                      | 98   | -7       |
| Form release                                 | 10,000           | 83,000     | 730      | 16                        | 12     | -25      | 595                                      | 34   | -94      |
| Graphic arts (sign)                          | 533,000          | 40,000     | -92      | 905                       | 20     | -98      | 409                                      | 122  | -70      |
| High temperature                             | 13,000           | 23,000     | 77       | 30                        | 35     | 17       | 539                                      | 366  | -32      |
| Industrial maintenance                       | 3,078,000        | 4,281,000  | 39       | 4,398                     | 5,203  | 18       | 361                                      | 300  | -17      |
| Lacquer, clear and opaque                    | 893,000          | 670,000    | -25      | 2,366                     | 1,663  | -30      | 648                                      | 617  | -5       |
| Mastic texture                               | 775,000          | 300,000    | -61      | 245                       | 98     | -60      | 129                                      | 118  | -9       |
| Metallic pigmented                           | 366,000          | 393,000    | 7        | 694                       | 538    | -22      | 456                                      | 358  | -22      |
| Nonflats, high gloss                         | 2,017,000        | 2,151,000  | 7        | 2,015                     | 1,439  | -29      | 301                                      | 248  | -18      |
| Nonflats, medium gloss                       | 14,116,000       | 15,630,000 | 11       | 5,422                     | 4,477  | -17      | 176                                      | 155  | -12      |
| Nonflats, low gloss                          | 3,061,000        | 4,475,000  | 46       | 932                       | 1,145  | 23       | 161                                      | 134  | -17      |
| Pre-treatment wash primer                    | 21,000           | 72,000     | 243      | 58                        | 31     | -47      | 733                                      | 252  | -66      |
| Primers, sealers, & undercoaters (2)         | 5,788,000        | 6,263,000  | 8        | 3,233                     | 3,055  | -6       | 199                                      | 169  | -15      |
| Quick dry enamels                            | 484,000          | 905,000    | 87       | 808                       | 1,485  | 84       | 401                                      | 403  | 0        |
| Quick dry primers, sealers, & undercoaters   | 377,000          | 1,913,000  | 407      | 454                       | 2,172  | 378      | 340                                      | 303  | -11      |
| Roof   | 1,982,000        | 2,909,000  | 47       | 880                       | 197    | -78      | 128                                      | 23   | -82      |
| Sanding sealers                              | 387,000          | 116,000    | -70      | 1,051                     | 307    | -71      | 658                                      | 648  | -2       |
| Stains, clear and semitransparent            | 1,736,000        | 1,442,000  | -17      | 2,211                     | 2,061  | -7       | 375                                      | 387  | 3        |
| Stains, opaque                               | 1,785,000        | 1,519,000  | -15      | 767                       | 522    | -32      | 171                                      | 157  | -8       |
| Swimming pool, general                       | 3,000            | 3,500      | 17       | 8                         | 6      | -25      | 572                                      | 406  | -29      |
| Traffic                                      | 4,237,000        | 2,883,000  | -32      | 1,901                     | 1,340  | -30      | 129                                      | 154  | 19       |
| Varnish, clear and semitransparent           | 861,000          | 780,000    | -9       | 1,482                     | 1,154  | -22      | 422                                      | 404  | -4       |
| Waterproofing sealers, clear                 | 950,000          | 972,000    | 2        | 1,184                     | 948    | -20      | 345                                      | 347  | 1        |
| Waterproofing sealers, opaque                | 74,000           | 98,000     | 32       | 94                        | 78     | -17      | 311                                      | 219  | -30      |
| Wood preservatives, below ground             | 37,000           | 3,500      | -91      | 58                        | 5      | -91      | 377                                      | 352  | -7       |
| Wood preservatives, clear & semitransparent  | 264,000          | 370,000    | 40       | 359                       | 332    | -8       | 356                                      | 229  | -36      |
| Other Aggregated Specialty Categories (3, 4) | 192,000          | 423,000    | 120      | 411                       | 647    | 57       | 566                                      | 416  | -27      |
| Other (5)                                    | 473,000          | 205,000    | -57      | 378                       | 196    | -48      | 223                                      | 239  | 7        |
| Other Large Categories Unique to 1998 (6)    | N/A              | 6,071,000  | N/A      | N/A                       | 1,466  | N/A      | N/A                                      | 68   | N/A      |
| Total  | 77,053,000       | 87,496,000 | 14       | 38,618                    | 36,297 | -6       |  |      |          |
| Nonflats, combined                           | 19,194,000       | 22,256,000 | 16       | 8,369                     | 7,061  | -16      | 187                                      | 160  | -14      |

- 1 1993 survey based on 1990 sales data; 1998 survey based on 1996 sales data.
- 2 Primers, sealers, and undercoaters in 1998 data includes sealers.
- 3 Other Aggregated Specialty Categories in 1993 data includes bond breakers, clear fire retardant, magnesite cement, multi-color, opaque wood preservatives, clear shellacs, opaque shellacs, and swimming pool repair coatings.
- 4 Other Aggregated Specialty Categories in 1998 data includes anti-fouling, bond breakers, chalkboard resurfacers, extreme high durability, clear fire retardant, heat reactive, magnesite cement, multicolor, nuclear, repair and maintenance thermoplastic, rust preventative, clear shellacs, opaque shellacs, swimming pool repair, low solids stains, thermoplastic rubber and mastics, opaque wood preservatives, and low solids wood preservatives.
- 5 "Other" represents coatings that respondents could not classify according to any of the 39 or 57 coating categories surveyed in the 1993 and 1998 surveys, respectively.
- 6 Data aggregated for bituminous and floor coatings because these large categories are unique to the 1998 survey.

**Table 8-3**

| Category                                     | Solventborne     |            |          |                           |        |          |                                       |      |          |   |      |          |
|--|------------------|------------|----------|---------------------------|--------|----------|---------------------------------------|------|----------|---|------|----------|
|  | Volume (gallons) |            |          | Emissions (tons per year) |        |          | Sales Weighted Average VOC regulatory |      |          | Sales Weighted Average Percent by Volume Solids |      |          |
|  | 1993             | 1998       | % Change | 1993                      | 1998   | % Change | 1993                                  | 1998 | % Change | 1993  | 1998 | % Change |
| Anti-graffiti                                | (3)              | (3)        | (3)      | (3)                       | (3)    | (3)      | 173                                   | 605  | 250      | 81  | 32   | -61      |
| Concrete curing compounds                    | 29,000           | 12,000     | -59      | 94                        | 33     | -65      | 794                                   | 677  | -15      | 14  | 20   | 43       |
| Dry fog                                      | 81,000           | 77,000     | -5       | 125                       | 113    | -10      | 392                                   | 367  | -6       | 43  | 51   | 19       |
| Fire retardant, opaque                       | 16,000           | 10,000     | -38      | 25                        | 11     | -56      | 373                                   | 267  | -28      | 53  | 72   | 36       |
| Flats  | 61,000           | 28,000     | -54      | 88                        | 43     | -51      | 362                                   | 373  | 3        | 47  | 51   | 9        |
| Form release                                 | 6,000            | 11,000     | 83       | 15                        | 11     | -27      | 597                                   | 247  | -59      | 32  | 12   | -62      |
| Graphic arts (sign)                          | (3)              | (3)        | (3)      | (3)                       | (3)    | (3)      | 412                                   | 183  | -55      | 61  | 77   | 26       |
| High temperature                             | 13,000           | 23,000     | 77       | 30                        | 35     | 17       | 539                                   | 367  | -32      | 37  | 57   | 56       |
| Industrial maintenance                       | 2,837,000        | 3,902,000  | 38       | 4,301                     | 5,070  | 18       | 374                                   | 313  | -16      | 57  | 63   | 11       |
| Lacquer, clear and opaque                    | 845,000          | 626,000    | -26      | 2,341                     | 1,647  | -30      | 668                                   | 647  | -3       | 26  | 21   | -20      |
| Mastic texture                               | (3)              | (3)        | (3)      | (3)                       | (3)    | (3)      | 274                                   | 223  | -19      | 58  | 53   | -9       |
| Metallic pigmented                           | 355,000          | 273,000    | -23      | 694                       | 513    | -26      | 470                                   | 456  | -3       | 53  | 45   | -15      |
| Nonflats, high gloss                         | 1,330,000        | 532,000    | -60      | 1,734                     | 813    | -53      | 348                                   | 366  | 5        | 61  | 53   | -13      |
| Nonflats, medium gloss                       | 1,471,000        | 522,000    | -65      | 1,723                     | 625    | -64      | 298                                   | 286  | -4       | 67  | 64   | -5       |
| Nonflats, low gloss                          | 94,000           | 34,000     | -64      | 147                       | 49     | -67      | 384                                   | 341  | -11      | 53  | 56   | 5        |
| Pre-treatment wash primer                    | (3)              | (3)        | (3)      | (3)                       | (3)    | (3)      | 740                                   | 716  | -3       | 8   | 10   | 19       |
| Primers, sealers, & undercoaters (2)         | 1,871,000        | 1,573,000  | -16      | 2,504                     | 2,260  | -10      | 371                                   | 357  | -4       | 54  | 52   | -5       |
| Quick dry enamels                            | 483,000          | 905,000    | 87       | 808                       | 1,485  | 84       | 402                                   | 403  | 0        | 56  | 50   | -10      |
| Quick dry primers, sealers, & undercoaters   | 285,000          | 1,076,000  | 278      | 438                       | 1,929  | 340      | 418                                   | 432  | 3        | 46  | 45   | -3       |
| Roof   | 617,000          | 116,000    | -81      | 674                       | 124    | -82      | 263                                   | 259  | -2       | 70  | 67   | -4       |
| Sanding sealers                              | 378,000          | 111,000    | -71      | 1,048                     | 306    | -71      | 667                                   | 665  | 0        | 23  | 19   | -17      |
| Shellacs, opaque                             | (3)              | (3)        | (3)      | (3)                       | (3)    | (3)      | 544                                   | 534  | -2       | 34  | 31   | -8       |
| Stains, clear and semitransparent            | 1,163,000        | 1,008,000  | -13      | 2,037                     | 1,883  | -8       | 432                                   | 449  | 4        | 44  | 43   | -4       |
| Stains, opaque                               | 258,000          | 127,000    | -51      | 422                       | 196    | -54      | 395                                   | 370  | -6       | 51  | 52   | 2        |
| Swimming pool, general                       | (3)              | (3)        | (3)      | (3)                       | (3)    | (3)      | 572                                   | 438  | -23      | 31  | 49   | 56       |
| Traffic                                      | 3,200,000        | 885,000    | -72      | 1,563                     | 723    | -54      | 132                                   | 222  | 68       | 79  | 63   | -21      |
| Varnish, clear and semitransparent           | 816,000          | 546,000    | -33      | 1,467                     | 1,051  | -28      | 434                                   | 462  | 7        | 44  | 43   | -2       |
| Waterproofing sealers, clear                 | 681,000          | 569,000    | -16      | 1,162                     | 852    | -27      | 418                                   | 360  | -14      | 41  | 54   | 32       |
| Waterproofing sealers, opaque                | 55,000           | 48,000     | -13      | 92                        | 63     | -32      | 399                                   | 319  | -20      | 49  | 45   | -8       |
| Wood preservatives, below ground             | (3)              | (3)        | (3)      | (3)                       | (3)    | (3)      | 377                                   | 352  | -7       | 51  | 55   | 7        |
| Wood preservatives, clear & semitransparent  | 231,000          | 296,000    | 28       | 353                       | 319    | -10      | 367                                   | 258  | -30      | 51  | 71   | 40       |
| Other Aggregated Specialty Categories (4, 5) | 928,100          | 437,000    | -53      | 1,531                     | 694    | -55      | 587                                   | 480  | -18      | 30  | 46   | 52       |
| Other (6)                                    | 156,000          | 150,000    | -4       | 322                       | 190    | -41      | 496                                   | 341  | -31      | 48  | 57   | 20       |
| Other Large Categories Unique to 1998 (7)    | N/A              | 1,789,000  | N/A      | N/A                       | 1,224  | N/A      | N/A                                   | 166  | N/A      | N/A   | 81   | N/A      |
| Total  | 18,260,000       | 15,686,000 | -14      | 25,738                    | 22,262 | -14      |                                       |      |          |   |      |          |
| Nonflats, combined                           | 2,895,000        | 1,088,000  | -62      | 3,604                     | 1,487  | -59      | 324                                   | 327  | 1        | 64  | 58   | -9       |

- 1 1993 survey based on 1990 sales data; 1998 survey based on 1996 sales data.
- 2 Primers, sealers, and undercoaters in 1998 data includes sealers.
- 3 Protected Data - fewer than three companies.
- 4 Other Aggregated Specialty Categories in 1993 data includes anti-graffiti, bond breakers, clear fire retardant, graphic arts, magnesite cement, mastic texture, multi-color, pre-treatment wash primers, below ground wood preservatives, opaque wood preservatives, clear shellacs, opaque shellacs, swimming pool, and swimming pool repair coatings.
- 5 Other Aggregated Specialty Categories in 1998 data includes anti-graffiti, anti-fouling, bond breakers, chalkboard resurfacers, extreme high durability, clear fire retardant, graphic arts, heat reactive, magnesite cement, mastic texture, multicolor, nuclear, pretreatment wash primers, repair and maintenance thermoplastic, rust preventative, clear shellacs, opaque shellacs, swimming pool, swimming pool repair, low solids stains, thermoplastic rubber and mastics, below ground wood preservatives, opaque wood preservatives, and low solids wood preservatives.
- 6 "Other" represents coatings that respondents could not classify according to any of the 39 or 57 coating categories surveyed in the 1993 and 1998 surveys, respectively.
- 7 Data aggregated for bituminous and floor coatings because these large categories are unique to the 1998 survey.

**Table 8-4**

| Category                                     | Waterborne       |            |          |                           |        |          |                                       |      |          |   |      |          |  |
|--|------------------|------------|----------|---------------------------|--------|----------|---------------------------------------|------|----------|---|------|----------|--|
|  | Volume (gallons) |            |          | Emissions (tons per year) |        |          | Sales Weighted Average VOC regulatory |      |          | Sales Weighted Average Percent by Volume Solids |      |          |  |
|  | 1993             | 1998       | % Change | 1993                      | 1998   | % Change | 1993                                  | 1998 | % Change | 1993  | 1998 | % Change |  |
| Anti-graffiti                                | (3)              | (3)        | (3)      | (3)                       | (3)    | (3)      | 123                                   | 92   | -25      | 52  | 26   | -50      |  |
| Concrete curing compounds                    | 169,000          | 399,000    | 136      | 18                        | 129    | 617      | 118                                   | 180  | 53       | 11  | 22   | 100      |  |
| Dry fog                                      | 24,000           | 126,000    | 425      | 5                         | 60     | 1,100    | 76                                    | 182  | 139      | 33  | 36   | 8        |  |
| Fire retardant, opaque                       | 7,000            | 46,000     | 557      | 0                         | 6      | N/A      | 26                                    | 46   | 77       | 46  | 56   | 22       |  |
| Flats  | 32,116,000       | 31,801,000 | -1       | 5,889                     | 5,267  | -11      | 105                                   | 98   | -7       | 39  | 35   | -10      |  |
| Form release                                 | 4,000            | 72,000     | 1,700    | 1                         | 0      | -100     | 592                                   | 2    | -100     | 2   | 0    | -100     |  |
| Graphic arts (sign)                          | (3)              | (3)        | (3)      | (3)                       | (3)    | (3)      | 97                                    | 10   | -90      | 41  | 35   | -14      |  |
| Industrial maintenance                       | 241,000          | 379,000    | 57       | 97                        | 132    | 36       | 206                                   | 170  | -17      | 38  | 35   | -9       |  |
| Lacquer, clear and opaque                    | 48,000           | 44,000     | -8       | 25                        | 16     | -36      | 302                                   | 181  | -40      | 29  | 34   | 20       |  |
| Mastic texture                               | (3)              | (3)        | (3)      | (3)                       | (3)    | (3)      | 88                                    | 79   | -10      | 50  | 51   | 2        |  |
| Metallic pigmented                           | 11,000           | 120,000    | 991      | 0                         | 25     | N/A      | 18                                    | 137  | 661      | 56  | 31   | -44      |  |
| Nonflats, high gloss                         | 687,000          | 1,619,000  | 136      | 281                       | 626    | 123      | 211                                   | 209  | -1       | 39  | 35   | -11      |  |
| Nonflats, medium gloss                       | 12,645,000       | 15,108,000 | 19       | 3,699                     | 3,852  | 4        | 162                                   | 151  | -7       | 37  | 36   | -2       |  |
| Nonflats, low gloss                          | 2,967,000        | 4,441,000  | 50       | 785                       | 1,096  | 40       | 154                                   | 133  | -14      | 37  | 36   | -3       |  |
| Pre-treatment wash primer                    | (3)              | (3)        | (3)      | (3)                       | (3)    | (3)      | 702                                   | 248  | -65      | 1   | 49   | 4,800    |  |
| Primers, sealers, & undercoaters (2)         | 3,917,000        | 4,690,000  | 20       | 729                       | 794    | 9        | 117                                   | 105  | -10      | 35  | 32   | -9       |  |
| Quick dry primers, sealers, & undercoaters   | 92,000           | 837,000    | 810      | 16                        | 243    | 1,419    | 97                                    | 136  | 40       | 38  | 41   | 7        |  |
| Roof   | 1,365,000        | 2,793,000  | 105      | 206                       | 73     | -65      | 67                                    | 13   | -81      | 44  | 44   | -1       |  |
| Sanding sealers                              | 9,000            | 5,000      | -44      | 3                         | 1      | -67      | 294                                   | 281  | -4       | 23  | 16   | -29      |  |
| Stains, clear and semitransparent            | 574,000          | 434,000    | -24      | 174                       | 178    | 2        | 258                                   | 242  | -6       | 18  | 24   | 31       |  |
| Stains, opaque                               | 1,528,000        | 1,392,000  | -9       | 345                       | 327    | -5       | 133                                   | 138  | 4        | 36  | 34   | -6       |  |
| Traffic                                      | 1,037,000        | 1,998,000  | 93       | 338                       | 616    | 82       | 121                                   | 124  | 2        | 55  | 56   | 2        |  |
| Varnish, clear and semitransparent           | 45,000           | 234,000    | 420      | 15                        | 104    | 593      | 206                                   | 270  | 31       | 28  | 29   | 4        |  |
| Waterproofing sealers, clear                 | 268,000          | 404,000    | 51       | 22                        | 96     | 336      | 158                                   | 330  | 109      | 10  | 11   | 13       |  |
| Waterproofing sealers, opaque                | 19,000           | 50,000     | 163      | 2                         | 15     | 650      | 58                                    | 124  | 114      | 47  | 48   | 3        |  |
| Wood preservatives, clear & semitransparent  | 32,000           | 74,000     | 131      | 6                         | 13     | 117      | 280                                   | 113  | -60      | 16  | 44   | 175      |  |
| Other Aggregated Specialty Categories (4, 5) | 673,705          | 408,000    | -39      | 167                       | 115    | -31      | 546                                   | 253  | -54      | 17  | 20   | 20       |  |
| Other (6)                                    | 317,000          | 55,000     | -83      | 56                        | 6      | -89      | 88                                    | 62   | -30      | 44  | 35   | -20      |  |
| Other Large Categories Unique to 1998 (7)    | N/A              | 4,281,000  | N/A      | N/A                       | 241    | N/A      | N/A                                   | 28   | N/A      | N/A   | 45   | N/A      |  |
| Total  | 58,796,000       | 71,810,000 | 22       | 12,879                    | 14,031 | 9        |                                       |      |          |   |      |          |  |
| Nonflats, combined                           | 16,299,000       | 21,168,000 | 30       | 4,765                     | 5,574  | 17       | 163                                   | 152  | -7       | 37  | 36   | -3       |  |

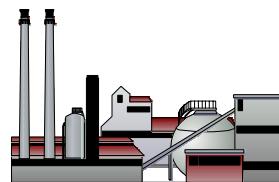
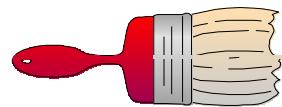
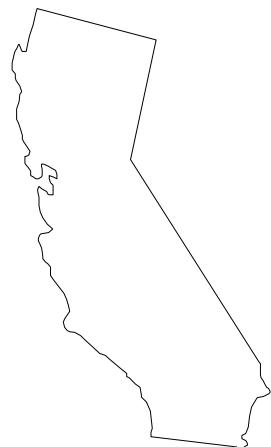
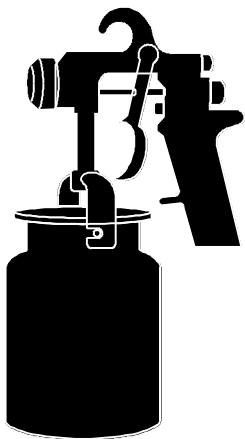
- 1 1993 survey based on 1990 sales data; 1998 survey based on 1996 sales data.
- 2 Primers, sealers, and undercoaters in 1998 data includes sealers.
- 3 Protected Data - fewer than three companies.
- 4 Other Aggregated Specialty Categories in 1993 data includes anti-graffiti, bond breakers, clear fire retardant, graphic arts, magnesite cement, mastic texture, multi-color, quick-dry enamels, clear shellacs, opaque shellacs, swimming pool, swimming pool repair, below ground wood preservatives, and opaque wood preservatives.
- 5 Other Aggregated Specialty Categories in 1998 data includes anti-fouling, anti-graffiti, bond breakers, chalkboard resurfacers, extreme high durability, clear fire retardant, graphic arts, heat reactive, magnesite cement, mastic texture, multicolor, nuclear, quick-dry enamels, repair and maintenance thermoplastic, rust preventative, clear shellacs, opaque shellacs, swimming pool, swimming pool repair, low solids stains, thermoplastic rubber and mastics, below ground wood preservatives, opaque wood preservatives, and low solids wood preservatives.
- 6 "Other" represents coatings that respondents could not classify according to any of the 39 or 57 coating categories surveyed in the 1993 and 1998 surveys, respectively.
- 7 Data aggregated for bituminous and floor coatings because these large categories are unique to the 1998 survey.

## **Appendix A:**

# **1998 Survey Questionnaire**

# Architectural and Industrial Maintenance Coatings Survey

1998



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California Environmental Protection Agency

Air Resources Board

## SURVEY CONTENTS

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Attachment A: Survey Forms

Attachment B: Chemical Abstract Service (CAS) Numbers and Synonyms

### **SUBMITTAL OF FORMS**

Please return the completed survey to the following address:

California Air Resources Board  
P.O. Box 2815  
Sacramento, CA 95812  
ATTN: SSD/Criteria Pollutants Branch  
Architectural Coatings Survey

### **ELECTRONIC SUBMITTAL OPTIONS**

Electronic submittal options are available. Details can be obtained by contacting the ARB or by visiting our web site at " [www.arb.ca.gov/arch/arch.htm](http://www.arb.ca.gov/arch/arch.htm) ."

Additional survey packages can also be downloaded from this site.

### **QUESTIONS**

If you have any questions or other requests please call:

|                  |          |                                      |
|------------------|----------|--------------------------------------|
| Mike Jaczola     | or write | California Air Resources Board       |
| tel 916.327.1515 |          | P.O. Box 2815                        |
| or               |          | Sacramento, CA 95812                 |
| Jim Behrmann     |          | ATTN: SSD/Criteria Pollutants Branch |
| tel 916.322.8273 |          | Architectural Coatings Survey        |
|                  |          | tel 916.322.6020 fax 916.322.6088    |

## INTRODUCTION

Thank you for participating in this survey of architectural and industrial maintenance coatings!

As general introduction, the survey asks you to complete four forms:

FORM I: Company information

FORM II: Product information

FORM III: Ingredient information for single or grouped products

FORM IV: Ingredient information for single or grouped products

If your company is the ***responsible party***, please complete FORM I and the appropriate number of FORMS II, III, and IV.

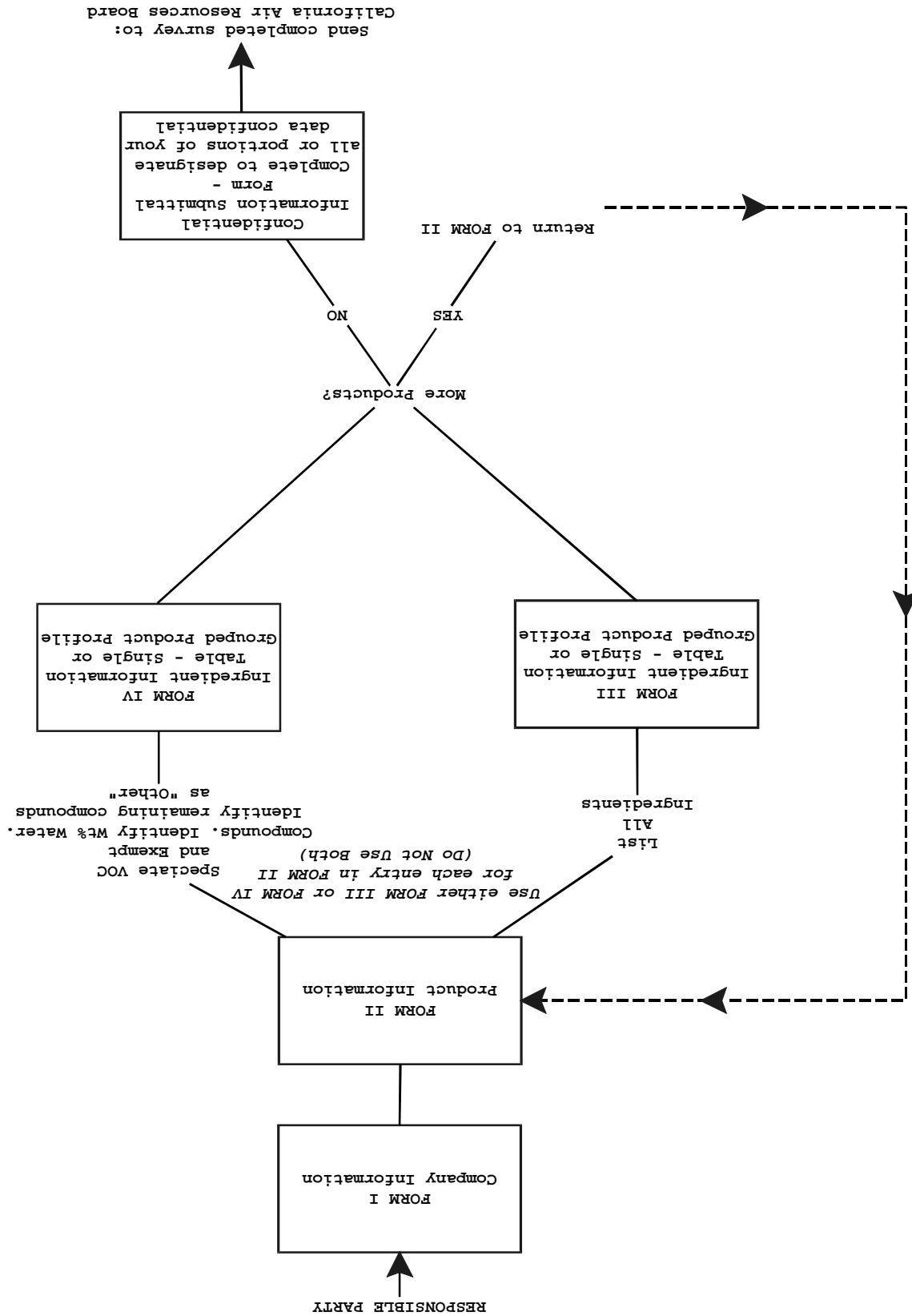
***“Responsible party”*** means the company, firm or establishment which is listed on the products' label. If the label lists two companies, firms or establishments, the responsible party is the party which the product was “manufactured for” or “distributed by,” as noted on the label.

If your company is not the ***responsible party*** for any architectural and industrial maintenance coating sold in California, please complete and submit only the top portion of FORM I to the Air Resources Board.

How will this survey information be used? Our existing inventory of air pollution emissions from architectural coatings is based on a survey of 1990 information that was last collected in 1993. Inventory information is necessary for planning and modeling to forecast the effects of new regulatory efforts. Accurate inventory information produces better results, and also assures that businesses are properly credited for successful reductions in emissions. Finally, the ingredient information requested will be used to study whether or not additional flexibility can be built into regulations based on the reactivity of ingredients.

We have tried to make this survey as simple as possible. As noted in the accompanying cover letter, we worked with several air pollution control districts as well as several industry members and the National Paint and Coatings Association on the content of the survey. However, you may very well have questions as you complete the survey. Do not hesitate to call us and we will answer your questions as quickly as possible.

Thank you again, in advance, for your time and participation in this survey.



## INSTRUCTIONS FOR COMPLETING SURVEY FORM I

The following instructions apply to FORM I - Company Information. General company information such as name and address are needed, as well as information regarding the company economics and business type. This information will assist in characterizing the types of businesses that are included in the survey as required by state law.

If your company is the ***responsible party*** please complete FORM I and the appropriate number of FORMS II, III, and IV.

***"Responsible party"* means the company, firm or establishment which is listed on the products' label. If the label lists two companies, firms or establishments, the responsible party is the party which the product was "manufactured for" or "distributed by," as noted on the label.**

If your company is not the ***responsible party*** for any architectural and industrial maintenance coating please complete and submit only the top portion of FORM I to the ARB.

**Company Name:** Please enter the name of the company also known as ***responsible party***. This name should also be the company name on FORM II - Product Information.

**Division Name:** If the respondent to the survey is representing a division of the company, please enter the name of the division.

**Address:** Enter the mail address of the company or division responsible for completing the survey.

**Contact Name:** Name of the person to be contacted by the ARB if there are questions about the survey responses.

**Title:** Business title of the contact person.

**Telephone:** Telephone number for the contact person.

**Fax:** Fax number of the contact person.

**Responsible Party:** Check the appropriate box (Yes or No) to indicate if your company is the responsible party (see definition above) for any architectural and industrial maintenance coatings that were sold in California.

**Note:** If you are not the responsible party please stop here and submit FORM I to the California Air Resources Board, P.O. Box 2815, Sacramento, CA 95812 ATTN: SSD/Criteria Pollutants Branch - Architectural Coatings Survey.

**Type of Business:** Check the box(s) that describes the primary type of business conducted by your company or division.

**Company Marketing Classification:** Check the box that describes your company's primary marketing classification.

**Independent Ownership:** Check the appropriate answer box (Yes or No) to indicate if the company is independently owned. If the company is not independently owned, enter the name and address of the parent company in the spaces provided.

**Standard Industrial Classification (SIC) codes:** Enter your company's primary SIC codes (see page 21).

**Gross Annual Receipts:** Check the box which identifies the gross annual receipts generated by the company or division in California.

**Employees:** Check the box which identifies the number of employees (including part-time and temporary staff) of the company or division.

**Certification:** Please have a designated contact person certify the accuracy of the completed Company Information (FORM I), Product Information (FORM II), and the Ingredient Information Tables (FORM III & IV).

## INSTRUCTIONS FOR COMPLETING SURVEY FORM II

This form requests specific information on each product or grouping of products. As explained below, products may be grouped under certain conditions. Only complete FORM II Product Information if you are the ***responsible party*** for a product sold in California during the calendar year 1996.

**Entry #:** Enter a number (1, 2, ...) for each entry on FORM II. This number will be used to relate products listed in this table to the ingredient information table in Forms III and IV.

**Coating Code:** Enter the code from the list below which best represents the reported coatings' category (see definitions on pages 12 - 17).

| <u>Code</u> | <u>Coating</u>               | <u>Code</u> | <u>Coating</u>                        | <u>Code</u> | <u>Coating</u>                      |
|-------------|------------------------------|-------------|---------------------------------------|-------------|-------------------------------------|
| 01          | Antenna                      | 22          | Magnesite cement                      |             | Stains:                             |
| 02          | Anti-fouling                 | 23          | Mastic texture                        | 41          | clear                               |
| 03          | Anti-graffiti                | 24          | Metallic pigmented                    | 42          | semitransparent                     |
| 04          | Bituminous                   | 25          | Multi-color                           | 43          | opaque                              |
| 05          | Bond breakers                |             | Nonflats:                             | 44          | low solids                          |
| 06          | Chalkboard<br>resurfacers    | 26          | High Gloss                            | 45          | Swimming Pool                       |
| 07          | Concrete Curing<br>Compounds | 27          | Medium Gloss                          | 46          | Swimming Pool                       |
| 08          | Dry Fog                      | 28          | Low Gloss                             |             | Repair                              |
| 09          | Extreme high<br>durability   | 29          | Nuclear                               | 47          | Thermoplastic rubber<br>and mastics |
|             | Fire retardant:              | 30          | Pre-treatment Wash                    | 48          | Traffic                             |
| 10          | clear                        | 31          | Primers                               |             | Varnish:                            |
| 11          | opaque                       | 32          | Primers, Sealers and<br>Undercoaters  | 49          | clear                               |
| 12          | Flats                        | 33          | Enamels                               | 50          | semitransparent                     |
| 13          | Floor                        | 34          | Primers, Sealers<br>and Undercoaters  |             | Waterproofing<br>sealers:           |
| 14          | Flow                         | 35          | Repair & maintenance<br>thermoplastic | 51          | clear                               |
| 15          | Form release<br>compounds    | 36          | Roof                                  | 52          | opaque                              |
| 16          | Graphic arts (sign)          | 37          | Rust preventative                     |             | Wood preservatives:                 |
| 17          | Heat reactive                | 38          | Sanding sealers                       | 53          | below ground                        |
| 18          | High Temperature             | 39          | Sealers                               | 54          | clear                               |
| 19          | Industrial<br>Maintenance    | 40          | Shellacs:                             | 55          | semitransparent                     |
|             | Lacquer:<br>clear            |             | clear                                 | 56          | opaque                              |
| 20          | opaque                       |             | opaque                                | 57          | low solids                          |
| 21          |                              |             |                                       | 58          | Other (Identify<br>use/application) |

**Number of Coatings Grouped** - Enter the number of individual coatings that are grouped as one entry. Color varieties of a coating that remain within one VOC range should be considered as one coating. Enter "1" if you are reporting one coating individually.

In reporting products for the survey, coatings within a coating category can be **reported either individually or as a group**. However, you may group coatings in a category together only if the following conditions are met:

- (1) The coatings belong to the same category (e.g., flats - category code 12). Color varieties of the same coating formulation should be considered one coating;
- (2) The coatings have the same carrier technology (e.g., solvent-borne, water-borne, 100% solids, etc.); and
- (3) The coatings have VOC contents (less water and less exempt compounds) that are within one VOC range.

| <u>Range g/l</u> | <u>Range g/l</u> | <u>Range g/l</u> |
|------------------|------------------|------------------|
| 0 - 50           | 251 - 300        | 501 - 550        |
| 51 - 100         | 301 - 350        | 551 - 600        |
| 101 - 150        | 351 - 400        | 601 - 650        |
| 151 - 200        | 401 - 450        | 651 - 700        |
| 201 - 250        | 451 - 500        | 701 and above    |

**Interior/Exterior/Dual:** Indicate whether the coating or coatings are designed for "interior" or "exterior" application. Enter "Dual" for dual purpose interior/exterior products.

**Carrier Technology:** Identify the carrier technology of the coating(s): Solvent-borne (SB), Water-borne (WB), or 100% Solids (S).

Note: Use "Sales Weighted Average" (SWA) for the next four data fields if you have chosen to group coatings. These entries include: % by volume solids, VOC Actual, VOC Regulatory, and VOC Regulatory after recommended thinning. See calculations on pages 18 and 19, and page 22 for sample calculation of SWA for VOC Regulatory.

**% by Volume Solids SWA:** Enter the solids content of the coating(s) as percent of total coating volume. (See calculations on pages 18 & 19)

**Density<sup>SWA</sup>:** Enter the mass per unit volume of the coating (g/l).

**VOC Actual SWA:** Enter the VOC content of the coating(s), as supplied, in grams of VOC per liter of coating. This is the weight of all volatile materials less the weight of water and less the weight of exempt compounds per the entire volume of the coating. This is NOT the same as VOC Regulatory. (See calculations pages 18 & 19)

**VOC Regulatory** <sup>SWA</sup>: Enter the VOC content of the coatings(s), as supplied, in grams of VOC per liter of coating, less water, less exempt compounds, and less any colorant added to the tint bases. This may be determined from the chemical composition data or previously determined by EPA Method 24, 40 CFR Part 60, as amended in Federal Register Vol. 57, No. 133, July 10, 1992, or ASTM D 3960-92. (See calculations on pages 18 & 19) Do not perform additional analysis for purposes of completing this survey.

**Recommended Thinning:** If manufacturer recommends thinning identify the diluent and ratio (e.g., mix 1 gal of product with ½ pint mineral spirits). Thinning information usually can be found on the coating can, label, or any other accompanying literature from the manufacturer.

**VOC Regulatory After Recommended Thinning** <sup>SWA</sup>: Enter the VOC Regulatory after recommended thinning of the coating(s) in grams of VOC per liter of Material. (See calculations on pages 18 & 19) NOTE - Use of water or an exempt solvent without co-solvents for thinning will not affect the VOC Regulatory content of the coating.

**1996 California Sales in Gallons:** Enter the California sales of the coating, in gallons, for the calendar year 1996. Identify those gallons which are sold in containers one quart or less, and containers larger than one quart.

**Estimating California Sales:** If California specific sales data are not available, sales may be estimated using national or regional sales figures that are apportioned appropriately. If you use population as a basis for determining sales, please use the U.S. Resident Population estimates provided on page 20 of this survey.

**Comments:** Enter any information that will help clarify entries made for FORM II.

**Page \_\_\_\_ of \_\_\_\_:** Enter the current page # out of the total pages submitted for FORM II.

**INSTRUCTIONS FOR COMPLETING SURVEY FORM III**  
**Ingredient Information Table**  
**Single or Grouped Product Profile**

FORM III requests ingredient information about single or grouped products. Use FORM III if you have elected to provide all product ingredients. In this table provide all ingredients which are part of the products' formulation. Provide this information for each entry in FORM II.

*For grouped products, report the ingredients of the sales leader in the group.*

**Entry # From FORM II:** Enter the Entry # from FORM II to which this ingredient list applies.

**Ingredient #:** Provide a numeric value (sequential) for each ingredient.

**Ingredient Name:** Enter the chemical name of the ingredient. Chemical names must be distinguished from trade names. For example, the chemical name of SD 40 Alcohol is ethanol. Enter the trade name of the ingredient if the chemical name is unknown.

**CAS#:** Please enter the Chemical Abstract Service (CAS) number for the ingredient. A listing of CAS numbers is included as Attachment B for your information.

**Weight % (of total material):** Enter the percent by weight of each ingredient in the final product. If the ingredient is a mixture of known components, list the components separately with their individual weight percentages in the final product. If the components of a mixture cannot be determined, list the ingredient as a single entity.

Reporting Level - List ingredients that individually amount to 1.0% or greater by weight of the final product.

**Aggregated Ingredients < 1.0%:** Aggregate each of the remaining ingredients that individually account for less than 1.0% of the final product and enter the weight percent.

**Total of All Ingredients:** The sum of all ingredients in the table must equal 100 percent by weight. If this value does not sum to 100, please check the component percentages.

**Comments:** Enter any information that will help clarify entries made for FORM III.

**Page \_\_\_\_ of \_\_\_\_:** If the ingredient list for one entry from FORM II spans multiple pages enter the current page # of the total.

## INSTRUCTIONS FOR COMPLETING SURVEY FORM IV

### Ingredient Information Table

#### Single or Grouped Product Profile

FORM IV requests ingredient information about single or grouped products. Use FORM IV if you have elected to identify each Volatile Organic Compound (VOC) and Exempt Compound (Exempt VOC). Any VOCs less than 1.0 percent by weight should be aggregated and entered as a single weight percent value. Any Exempt Compounds less than 1.0 percent by weight should be aggregated and entered as a single weight percent value. Identify the weight percent water. Any remaining ingredients should be included in "All Other" for a total of all ingredients equaling 100 percent by weight of the product. Provide this information for each entry in FORM II.

*For grouped products, report the ingredients of the sales leader in the group.*

**Entry # From FORM II:** Enter the Entry # from FORM II to which this ingredient list applies.

**Ingredient #:** Provide a numeric value (sequential) for each ingredient.

**Ingredient Name:** Enter the chemical name of the ingredient. Chemical names must be distinguished from trade names. For example, the chemical name of SD 40 Alcohol is ethanol. Enter the trade name of the ingredient if the chemical name is unknown.

**CAS#:** Please enter the Chemical Abstract Service (CAS) number for the ingredient. A listing of CAS numbers is included as Attachment B.

**Weight % (of total material):** Enter the percent by weight of each ingredient in the final product. If the ingredient is a mixture of known components, list the components separately with their individual weight percentages in the final product. If the components of a mixture cannot be determined, list the ingredient as a single entity.

Reporting Level - List ingredients that individually amount to 1.0% or greater by weight of the final product.

**VOCs:** Enter the name, CAS #, and percent by weight of each VOC in the final product.

**Exempt Compounds (Exempt VOCs):** Enter the name, CAS #, and percent by weight of each Exempt VOC in the final product.

**Aggregated VOCs < 1.0%:** Aggregate each of the remaining VOCs that individually account for less than 1.0% of the final product and enter the weight percent.

**Aggregated Exempt Compounds < 1.0%:** Aggregate each of the remaining Exempt Compounds that individually account for < 1.0% of the final product and enter the weight percent.

**ALL Other (Remaining Ingredients) :** Enter remaining non-volatile ingredients.

**Total of All Ingredients:** The sum of all ingredients in the table must equal 100 percent by weight. If this value does not sum to 100, please check the component percentages. This means that the following:

| <u>Ingredient Groups</u>           | <u>Wt%</u> |
|------------------------------------|------------|
| Sum of VOCs                        | #          |
| Sum of Exempt Compounds            | #          |
| Aggregated VOCs < 1.0%             | #          |
| Aggregated Exempt Compounds < 1.0% | #          |
| Water                              | #          |
| All Other                          | #          |
| <br>Total of All Ingredients       | <br>100%   |

**Comments:** Enter any information that will help clarify entries made for FORM IV.

**Page \_\_\_\_ of \_\_\_\_:** If the ingredient list for one entry from FORM II spans multiple pages enter the current page # of the total.

## DEFINITIONS

**Antenna Coating:** means a coating formulated and recommended for application to equipment and associated structural appurtenances that are used to receive or transmit electromagnetic signals.

**Anti-fouling Coating:** means a coating formulated and recommended for application to submerged stationary structures and their appurtenances to prevent or reduce the attachment of marine or freshwater biological organisms.

**Anti-Graffiti Coatings :** Industrial maintenance coatings formulated for and applied to exterior surfaces to resist repeated scrubbing and exposure to harsh solvents and cleaners used to remove graffiti.

**Appurtenance:** means any accessory to a stationary structure, whether installed or detached at the proximate site of installation, including but not limited to: bathroom and kitchen fixtures; cabinets; concrete forms; doors; elevators; fences; hand railings; heating equipment, air conditioning equipment, and other fixed mechanical equipment or stationary tools; lamp posts; partitions; pipes and piping systems; rain gutters and downspouts; stairways, fixed ladders, catwalks, and fire escapes; and window screens.

**Architectural Coatings :** Coatings applied to stationary structures and their appurtenances, to mobile homes, to pavements, or to curbs.

**Bituminous Coating :** Coatings formulated and recommended for roofing, pavement sealing, or waterproofing that incorporates bitumens. Bitumens are black or brown materials including, but not limited to, asphalt, tar, pitch, and asphaltite that are soluble in carbon disulfide, consist mainly of hydrocarbons, and are obtained from natural deposits of asphalt or as residues from the distillation of crude petroleum or coal.

**Bond Breakers :** Coatings applied between layers of concrete to prevent the freshly poured top layer of concrete from bonding to the layer over which it is poured.

**Carbonates:** Carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate.

**Chalkboard Resurfacer:** means a coating formulated and recommended for application to chalkboards to restore a suitable surface for writing with chalk.

**Clear Coating:** means a coating that produces a dry film that allows light to pass through, so that the substrate may be distinctly seen.

**Clear Wood Finishes :** Clear and semi-transparent coatings, including lacquers and varnishes, applied to wood substrates to provide a transparent or translucent solid film.

**Coating:** means a protective, decorative, or functional film applied to a surface. Such materials include, but are not limited to, paints, topcoats, varnishes, sealers, stains, washcoats, basecoats, enamels, and temporary protective coatings.

**Colorant:** Solutions of dyes or suspensions of pigments that are added to coatings during production, in paint stores or on-site to produce the desired colors.

**Concrete Curing Compounds :** Coatings applied to freshly poured concrete to retard the evaporation of water.

**Density:** Mass per unit volume.

**Dry Fog Coatings :** Coatings formulated only for spray application such that over spray droplets dry before subsequent contact with other surfaces.

**Exempt Compounds** : means any of the following organic compounds (compounds with negligible photochemical reactivity):

|   |               |
|---|---------------|
| methane;  | [ 74-82-8 ] * |
| methylene chloride (dichloromethane);   | [ 75-09-2 ]   |
| 1,1,1-trichloroethane (methyl chloroform);  | [ 71-55-6 ]   |
| trichlorofluoromethane (CFC-11);  | [ 75-69-4 ]   |
| dichlorodifluoromethane (CFC-12);   | [ 75-43-4 ]   |
| 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113);  | [ 76-13-1 ]   |
| 1,2-dichloro-1,1,2,2-tetrafluoroethane (CFC-114);   | [ 76-14-2 ]   |
| chloropentafluoroethane (CFC-115);  | [ 76-15-3 ]   |
| chlorodifluoromethane (HCFC-22);  | [ 75-45-6 ]   |
| 1,1,1-trifluoro-2,2-dichloroethane (HCFC-123);  | [ 306-83-2 ]  |
| 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124);  | [ 2837-89-0 ] |
| 1,1-dichloro-1-fluoroethane (HCFC-141b);  | [ 1717-00-6 ] |
| 1-chloro-1,1-difluoroethane (HCFC-142b);  | [ 75-68-3 ]   |
| trifluoromethane (HFC-23);  | [ 75-46-7 ]   |
| pentafluoroethane (HFC-125);  | [ 354-33-6 ]  |
| 1,1,2,2-tetrafluoroethane (HFC-134);  | [ 359-35-3 ]  |
| 1,1,1,2-tetrafluoroethane (HFC-134a);   | [ 811-97-2 ]  |
| 1,1,1-trifluoroethane (HFC-143a);   | [ 420-46-2 ]  |
| 1,1-difluoroethane (HFC-152a);  | [ 75-37-6 ]   |
| cyclic, branched, or linear completely methylated siloxanes;  | [ various ]   |
| the following classes of perfluorocarbons:  | [ various ]   |
| (A) cyclic, branched, or linear, completely fluorinated alkanes;  |               |
| (B) cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;                                   |               |
| (C) cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and                      |               |
| (D) sulfur-containing perfluorocarbons with no unsaturations and with the sulfur bonds only to carbon and fluorine; and |               |

the following low-reactive organic compounds which have been exempted by the U.S. EPA:

|  |              |
|--|--------------|
| acetone;   | [ 67-64-1 ]  |
| ethane;  | [ 74-84-0 ]  |
| [perchloroethylene] **; and                                      | [ 127-18-4 ] |
| parachlorobenzotrifluoride (1-chloro-4-trifluoromethyl benzene). | [ 98-56-6 ]  |

\* NOTE: Chemical Abstract Service (CAS) identification numbers have been included in brackets [ ] for convenience.

\*\* The Air Resources Board exempted Perchloroethylene from the definition of VOC in the Consumer Products regulations in November 1996. Perchloroethylene is under evaluation for other inventory categories.

**Exterior Coating:** means an architectural coating formulated and recommended for use in conditions exposed to the weather.

**Extreme High Durability Coating:** means an air dry fluoropolymer-based coating that is formulated and recommended for the protection of architectural subsections and that meets the weathering requirements of American Architectural Manufacturer's Association specification 605.2 Section 7.9.

**Fire-Retardant Coatings** : Coatings which have a flame spread index of less than 25 when tested in accordance with ASTM Designation E-84-87, " Standard Test Method for Surface Burning Characteristics of Building Material," after application to Douglas Fir according to the manufacturer's recommendations.

**Flat Architectural Coatings** : Coatings which register a gloss of less than 15 on an 85 degree meter or less than 5 on a 60 degree meter.

**Floor Coating:** means a coating that is formulated and recommended for application to flooring including, but not limited to, decks, porches, and steps and that has a high degree of abrasion resistance.

**Flow coating:** means a coating that is used by electric power companies or their subcontractors to maintain the protective coating systems present on utility transformer units.

**Form Release Compounds :** Coatings applied to a concrete form to prevent the freshly poured concrete from bonding to the form. The form may consist of wood, metal, or some material other than concrete.

**Graphic Arts Coatings (Sign Paints) :** Coatings formulated for and hand-applied by artists using brush or roller techniques to indoor and outdoor signs (excluding structural components) and murals, including lettering enamels, poster colors, copy blockers and bulletin enamels.

**Heat Reactive Coating:** means a high performance phenolic-based coating requiring a minimum temperature of 191 °C (375 °F) to 204 °C (400 °F) to obtain complete polymerization or cure. These coatings are formulated and recommended for commercial and industrial use to protect substrates from degradation and maintain product purity in which one or more of the following extreme conditions exist:

1. Continuous or repeated immersion exposure to 90 to 98 percent sulfuric acid or oleum;
2. Continuous or repeated immersion exposure to strong organic solvents;
3. Continuous or repeated immersion exposure to petroleum processing at high temperatures and pressures; and
4. Continuous or repeated immersion exposure to food or pharmaceutical products which may or may not require high temperature sterilization.

**Importer:** A company, group, or individual that brings architectural coatings from a location outside the United States into the United States for sale or distribution within the United States.

**High Temperature Coatings :** Industrial maintenance coatings formulated for and applied to substrates exposed continuously or intermittently to temperatures above 400 °F.

**Industrial Maintenance Coatings :** High performance coatings formulated for and applied to substrates in industrial, commercial, or institutional situations that are exposed to one or more of the following extreme environmental conditions:

- (I) immersion in water, waste water, or chemical solutions (aqueous and non-aqueous solutions), or chronic exposure of interior surfaces to moisture condensation;
- (ii) acute or chronic exposure to corrosive, caustic or acidic agents, or to chemicals, chemical fumes, chemical mixtures, or solutions;
- (iii) repeated exposure to temperatures in excess of 250 °F;
- (iv) repeated heavy abrasion, including mechanical wear and repeated scrubbing with industrial solvents, cleansers, or scouring agents; or
- (v) exterior exposure of metal structures.

Industrial Maintenance Coatings are not for residential use or use in areas of industrial, commercial, or institutional facilities which do not experience industrial environmental conditions such as office space and meeting rooms.

**Interior Coating:** means an architectural coating formulated and recommended for use in conditions not exposed to natural weathering.

**Label:** Any written, printed, or graphic matter affixed to, applied to, attached to, blown into, formed, molded into, embossed on, or appearing upon any architectural coating container for purposes of branding, identifying, or giving information with respect to the product, use of the product, or contents of the container.

**Lacquers:** Wood finishes formulated with nitrocellulose or synthetic resins to dry by evaporation without chemical reaction, including lacquer sanding sealers.

**Low Solids Stains and Wood Preservatives:** Stains and wood preservative containing one pound or less of solids per gallon (120 grams per liter) of coating material and for which at least half of the volatile component is water.

**Magnesite Cement Coatings :** Coatings formulated for and applied to magnesite cement decking to protect the magnesite cement substrate from erosion by water.

**Manufacturer:** A company, group, or individual that produces, packages, or repackages architectural coatings for sale or distribution in the United States.

**Mastic Texture Coatings :** Coatings formulated to cover holes and minor cracks and to conceal surface irregularities, and applied in a thickness of at least 10 mils (dry, single coat).

**Metallic Pigmented Coatings :** Coatings containing at least 0.4 pounds of metallic pigment per gallon of coating as applied.

**Multi-Color Coating :** Coatings which exhibit more than one color when applied and which are packaged in a single container and applied in a single coat.

**Nonflat Architectural Coatings :** Coatings which register a gloss of 15 or greater on an 85 degree meter or 5 or greater on a 60 degree meter.

**Nonflats - high gloss :** Nonflat coatings which register a gloss of 70 or more on a 60 degree meter.

**Nonflats - medium gloss :** Nonflat coatings which register a gloss of 20 or more but less than 70 on a 60 degree meter.

**Nonflats - low gloss :** Nonflat coatings which register a gloss greater than 5 or more but less than 20 on a 60 degree meter.

**Nuclear Coating:** means any protective coating used to seal porous surfaces such as steel (or concrete) that otherwise would be subject to intrusion by radioactive materials. These coatings must be resistant to long-term (service life) cumulative radiation exposure (American Society for Testing and Materials Method D4082), relatively easy to decontaminate (American Society for Testing and Materials Method D4256), and resistant to various chemicals to which the coatings are likely to be exposed (American Society for Testing and Materials Method D3912). General protective requirements are outlined by the Department of Energy (formerly U.S. Atomic Energy Commission Regulatory Guide 1.54).

**Opaque Coating:** A coating producing a dry film that does not allow light to pass through, so that the substrate is concealed from view.

**Pre-treatment Wash Primers :** Coatings which contain a minimum of 0.5% acid by weight, applied directly to bare metal surfaces to provide necessary surface etching.

**Primers:** Coatings formulated and applied to substrates to provide a firm bond between the substrate and subsequent coats.

**Quick Dry Enamels :** Non-flat coatings which comply with the following:

- (I) capable of being applied directly from the container by brush or roller under normal conditions, normal conditions being temperatures between 60 °F and 80°F.
- (ii) when tested in accordance with ASTM D 1640, they shall: set to touch in two hours or less, dry hard in eight hours or less, and be tack free in four hours or less by the mechanical test method.

(iii) shall register a gloss of 70 or more on a 60 degree meter.

**Quick Dry Primers, Sealers and Undercoaters** : Primers, sealers and undercoaters which are dry to touch in one-half hour and can be re-coated in two hours, when tested in accordance with ASTM D1640.

**Responsible Party:** The company, firm or establishment which is listed on the product's label. If the label lists two companies, firms or establishments, the responsible party is the party which the product was "manufactured for" or "distributed by," as noted on the label.

**Repair and maintenance thermoplastic coating:** means an industrial maintenance coating that has vinyl or chlorinated rubber as a primary resin and is recommended solely for the repair of existing vinyl or chlorinated rubber coatings without the full removal of the existing coating system.

**Roof Coatings** : Coatings formulated for application to exterior roofs and for the primary purpose of preventing water penetration, or reflecting heat or ultraviolet radiation.

**Rust preventive coating:** means a coating formulated and recommended for use in preventing the corrosion of ferrous metal surfaces in residential situations.

**Sanding Sealers** : Clear wood coatings formulated for and applied to bare wood for sanding and to seal the wood for subsequent application of varnish.

**Sealers**: A coating formulated for and applied to a substrate to prevent subsequent coatings from being absorbed by the substrate, or to prevent harm to subsequent coatings by materials in the substrate.

**Semitransparent Coating:** A coating formulated and recommended for application to substrates to impart a desired color without completely concealing the surface or its natural texture or grain pattern.

**Shellacs**: Clear or pigmented coatings formulated solely with the resinous secretions of the lac beetle (*laccifer lacca*), thinned with alcohol, and forms a film by solvent evaporation without chemical reaction.

**SIC (Standard Industrial Classification) Code:** A United States Department of Commerce system that organizes all industry types in the United States. Each business establishment is classified according to its primary activity, signified by a four digit SIC code.

**Specific Gravity:** The ratio of the mass of a solid or liquid to the mass of an equal volume of distilled water at 4 °C (39 °F).

**Stain:** Clear and semitransparent solution or suspension of coloring matter (dyes or pigments or both) in a vehicle, designed to color a surface (usually wood) by penetration without hiding it or leaving a continuous film.

**SWA:** Sales Weighted Average (see calculations pages 18 & 19)

**Swimming Pool Coatings** : Coatings formulated and used to coat the interior of swimming pools and compatible with swimming pool water chemistry.

**Swimming Pool Repair Coatings** : Chlorinated rubber based coatings used for the repair and maintenance of swimming pools over existing chlorinated rubber based coatings.

**Thermoplastic Rubber Coating and Mastic** : A coating or mastic formulated and recommended for application to roofing or other structural surfaces and that incorporates no less than 40 percent by weight of thermoplastic rubbers in the total resin solids and may also contain other ingredients including, but not limited to, fillers, pigments, and modifying resins.

**Tint Base:** means a coating to which colorant is added to produce a desired color.

**Traffic Coatings :** Coatings formulated for and applied to public streets, highways and other surfaces including, but not limited to, curbs, berms, driveways, and parking lots.

**Undercoaters:** Coatings formulated and applied to substrates to provide a smooth surface for subsequent coats.

**Varnishes:** Clear wood finishes formulated with various resins to dry by chemical reaction on exposure to air.

**Volatile Organic Compound (VOC) :** Any compound of carbon, excluding carbonates (carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate), and exempt compounds.

**VOC Actual:** Weight of all volatile materials less the weight of water and less the weight of exempt compounds per the entire volume of the coating. This is NOT the same as VOC Regulatory. See calculations pages 18 & 19.

**VOC Regulatory:** Enter the VOC content of the coatings(s), as supplied, in grams of VOC per liter of coating, less water, less exempt compounds, and less any colorant added to the tint bases. This may be determined from the chemical composition data or previously determined by EPA Method 24, 40 CFR Part 60, as amended in Federal Register Vol. 57, No. 133, July 10, 1992, or ASTM D 3960-92. See calculations pages 18 & 19.

**Waterproofing Sealers :** Coatings formulated and applied for the sole purpose of protecting porous substrates by preventing the penetration of water and which do not alter the appearance or texture of the substrate.

**Wood Preservatives:** Coatings which are formulated to protect wood from decay and insect attack.

## CALCULATIONS

### VOC Content Calculations

The following equations can be used to calculate entries contained in Form II of this survey.

$$VOC_{Actual} = \frac{W_{vm} - W_w - W_e}{V_c}$$

$$VOC_{Regulatory} = \frac{W_{vm} - W_w - W_e}{V_c - V_w - V_e}$$

$$VOC_{Regulatory (Low Solids)} = \frac{W_{vm} - W_w - W_e}{V_c} \text{ Use for low solid stains and wood preservatives}$$

Where:

|          |   |  |
|----------|---|--|
| $W_{vm}$ | = | Total weight of volatile materials (VOC+water+exempt compounds) in the coating, in grams |
| $W_w$    | = | Weight of water in the coating, in grams   |
| $W_e$    | = | Weight of exempt compounds in the coating, in grams                                      |
| $V_c$    | = | Total volume of the coating, in liters   |
| $V_w$    | = | Volume of water in the coating, in liters  |
| $V_e$    | = | Volume of exempt compounds in the coating, in liters                                     |

### VOC Regulatory After Recommended Thinning

The following equation can be used to calculate VOC after the coatings are thinned with VOC containing solvents.

$$VOC_{After Recommended Thinning} = \frac{Volume_{Coating} \times VOC_{Regulatory} + Volume_{Thinner} \times VOC_{Thinner}}{Volume_{Coating} + Volume_{Thinner}}$$

### Percent Volume of Solids

The following are two equations that can be used to calculate the percent volume of solids. The choice of equation depends on the type of information that is known about the coating.

- (1) If the weight and density of all of the solid (nonvolatile) materials are known, then the following equation may be used:

$$\% \text{ by Volume of Solids} = \frac{\text{Weight of Solids}}{\text{Density of Solids} \times \text{Volume of Coating Material}} \times 100$$

- (2) If instead, only the volatile components of a coating (VOC, water and exempt compound) are known, the percent volume of solids may be estimated by the following equation.

$$\% \text{ by Volume Solids} = (1 - \frac{W_w}{D_w \times V_c} - \frac{W_{voc}}{D_{voc} \times V_c} - \frac{W_e}{D_e \times V_c}) \times 100$$

Where:

|           |   |   |
|-----------|---|---|
| $W_w$     | = | Weight of water in the coating, in grams            |
| $W_{voc}$ | = | Weight of VOC in the coating, in grams              |
| $W_e$     | = | Weight of exempt compounds in the coating, in grams |
| $D_w$     | = | Density of water, in grams per liter                |
| $D_{voc}$ | = | Density of VOC, in grams per liter                  |
| $D_e$     | = | Density of exempt compounds, in grams per liter     |
| $V_c$     | = | Total volume of the coating, in liters              |

### Sales Weighted Average Calculation

The Sales Weighted Average (SWA) is an average value for grouped coatings, calculated by weighting the individual values by their sales. For grouped coatings in this survey, the SWA should be used to report the following entries on FORM II (Product Information): % by Volume Solids, Density, VOC Actual, VOC Regulatory, and VOC Regulatory after recommended thinning. Coatings can be grouped only if they are within the same coatings category, the same VOC range, and if they are based on the same carrier technology. The following equation can be used to calculate Sales Weighted Average.

$$SWA = \frac{(Value_1 \times Sales_1 + Value_2 \times Sales_2 + \dots + Value_n \times Sales_n)}{Sales_1 + Sales_2 + \dots + Sales_n}$$

Where:

|                         |   |  |
|-------------------------|---|--|
| $Value_{(1,2,\dots,n)}$ | = | Coating characteristic values (e.g. % by Volume of Solids, Density, VOC Actual, VOC Regulatory, VOC Regulatory after thinning) for products 1,2,...n |
| $Sales_{(1,2,\dots,n)}$ | = | Sales for products 1,2,...n  |

### Conversion Factors

VOC Regulatory (weight per volume):

one pound VOC per gallon (US) = 119.82 grams VOC per liter

Units of Volume:

1 fl oz = 0.029574 liters

1 liquid pint = 0.47318 liters

1 liquid quart = 2 liquid pints = 0.94635 liters

1 gallon = 4 liquid quarts = 3.7854 liters

Units of Mass:

| Unit   | ounce(oz) | pound(lb) | gram(g) | kilogram(kg) |
|--------|-----------|-----------|---------|--------------|
| 1 oz = | 1         | 0.0625    | 28.3495 | 0.02834      |
| 1 lb = | 16        | 1         | 453.592 | 0.45359      |

**UNITED STATES RESIDENT POPULATION**  
**July 1, 1995**

United States Total = 262,755,000

| <u>STATE</u>         | <u>THOUSANDS</u> | <u>RANK</u> | <u>STATE</u>   | <u>THOUSANDS</u> | <u>RANK</u> |
|----------------------|------------------|-------------|----------------|------------------|-------------|
| Alabama              | 4,253            | 22          | Montana        | 870              | 44          |
| Alaska               | 604              | 48          | Nebraska       | 1,637            | 37          |
| Arizona              | 4,218            | 23          | Nevada         | 1,530            | 38          |
| Arkansas             | 2,484            | 33          | New Hampshire  | 1,148            | 42          |
| California           | 31,589           | 1           | New Jersey     | 7,945            | 9           |
| Colorado             | 3,747            | 25          | New Mexico     | 1,685            | 36          |
| Connecticut          | 3,275            | 28          | New York       | 18,136           | 3           |
| Delaware             | 717              | 46          | North Carolina | 7,195            | 11          |
| District of Columbia | 554              | (X)         | North Dakota   | 641              | 47          |
| Florida              | 14,166           | 4           | Ohio           | 11,15            | 17          |
| Georgia              | 7,201            | 10          | Oklahoma       | 3,278            | 27          |
| Hawaii               | 1,187            | 40          | Oregon         | 3,141            | 29          |
| Idaho                | 1,163            | 41          | Pennsylvania   | 12,072           | 5           |
| Illinois             | 11,830           | 6           | Rhode Island   | 990              | 43          |
| Indiana              | 5,803            | 14          | South Carolina | 3,673            | 26          |
| Iowa                 | 2,842            | 30          | South Dakota   | 729              | 45          |
| Kansas               | 2,565            | 32          | Tennessee      | 5,256            | 17          |
| Kentucky             | 3,860            | 24          | Texas          | 18,724           | 2           |
| Louisiana            | 4,342            | 21          | Utah           | 1,951            | 34          |
| Maine                | 1,241            | 39          | Vermont        | 585              | 49          |
| Maryland             | 5,042            | 19          | Virginia       | 6,618            | 12          |
| Massachusetts        | 6,074            | 13          | Washington     | 5,431            | 15          |
| Michigan             | 9,549            | 8           | West Virginia  | 1,828            | 35          |
| Minnesota            | 4,610            | 20          | Wisconsin      | 5,123            | 18          |
| Mississippi          | 2,697            | 31          | Wyoming        | 480              | 50          |
| Missouri             | 5,324            | 16          |                |                  |             |

X = Not Applicable

Source: U.S. Bureau of the Census (Table 27, 1996 Statistical Abstract of the United States)

## SIC CODES

The SIC codes below represent only portions of Manufacturing, Wholesale Trade and Retail Trade. The list is by no means all inclusive, but represents a useful reference if your company SIC code is not known. A full listing is available from the ARB upon request. Complete listings and detailed descriptions are also available via the internet.

### CHEMICALS AND ALLIED PRODUCTS

2810 -- Industrial Inorganic Chemicals  
2812 -- Alkalies and chlorine  
2813 -- Industrial gases  
2816 -- Inorganic pigments  
2819 -- Industrial inorganic chemicals, not elsewhere classified  
2820 -- Plastics Materials and Synthetic Resins,  
    Synthetic Rubber, Cellulosic, etc.  
2821 -- Plastics materials and resins  
2822 -- Synthetic rubber  
2823 -- Cellulosic manmade fibers  
2824 -- Organic fibers, noncellulosic  
2843 -- Surface active agents  
2850 -- Paints, Varnishes, Lacquers, Enamels, and  
    Allied Products  
2851 -- Paints and allied products  
2860 -- Industrial Organic Chemicals  
2861 -- Gum and wood chemicals  
2865 -- Cyclic crudes and intermediates  
2869 -- Industrial organic chemicals, not elsewhere  
    classified  
2890 -- Miscellaneous Chemical Products  
2891 -- Adhesives and sealants  
2895 -- Carbon black  
2899 -- Chemical preparations, not elsewhere  
    classified

### WHOLESALE TRADE

5085 -- Industrial Supplies  
5160 -- Chemicals and Allied Products  
5169 -- Chemicals & allied products, not elsewhere  
    classified  
5198 -- Paint products wholesale

### RETAIL

5211 -- Lumber & bldg mtl retail  
5231 -- Paint, glass, and wallpaper stores  
5251 -- Hardware stores

## Example Data sheet

The example data below corresponds to the completed survey forms on the pages that follow. This example is provided only to help you understand how the survey form should be completed. **You do not have to provide your data in the format shown below for the survey.**

### Product Example #1

#### FORM II - Product Information Sheet

Page Number 1 of 1

Entry #: 1

Coating Code/Type: 27/Interior nonflat -  
medium gloss

# of grouped coatings: 3 products grouped

Interior/Exterior/Dual: Interior

Carrier Technology: Water-borne

% by volume solids: product 1 = 40, 2 = 38, 3 = 48  
Sales Weighted Average (SWA) = 43

Density: 1,438 g/l

VOC Actual (g/l): 1 = 80, 2 = 100, 3 = 120,  
SWA = 104

VOC Regulatory: 1 = 120, 2 = 160, 3 = 180

SWA = 160 (see sample calculation below)

Recommended Thinning: None/Not Applicable (N/A)

Diluent: None/Not Applicable

VOC Regulatory after recommended thinning: N/A

Sales Information (containers > than 1 quart): 1 = 50,000, 2 = 80,000, 3 = 100,000, Total = 230,000 gallons.

Sample calculation:

$$VOC \text{ Regulatory}^{SWA} = \frac{( Value_1 \times Sales_1 + Value_2 \times Sales_2 + \dots + Value_n \times Sales_n )}{Sales_1 + Sales_2 + \dots + Sales_n}$$

$$VOC \text{ Regulatory}^{SWA} = \frac{( 120g/l \times 50,000gal + 160g/l \times 80,000gal + 180g/l \times 100,000gal )}{50,000gal + 80,000gal + 100,000gal} = 160$$

#### FORM III - Ingredient Information Table

XYZ Company lists all ingredients.

Product Example #2

FORM II - Product Information Sheet

Page Number 1 of 1

Entry #: 2

Coating Code/Type: 19/Industrial maintenance

# of grouped coatings: individual product

Interior/Exterior/Dual: Exterior

Carrier Technology: Solvent-borne

% by volume solids: 67

Density: 1,200 g/l

VOC Actual (g/l): 290 g/l

VOC Regulatory: 338 g/l

Recommended Thinning: 1 gallon product with 1/10  
gallon mineral spirits

Diluent: Mineral Spirits (820 g/l VOC)

VOC Regulatory after recommended thinning: 381 g/l

Sales Information: 7,000 one quart containers (1,750 gallons) and 30,000 one gallon containers.

FORM IV - Ingredient Information Table

XYZ speciates VOC and exempt compounds. Identifies Wt% water. Remaining Wt% is identified under all other.

**FORM I**  
**Company Information**

|  |   |
|--|---|
| Company / Division Name: XYZ Company   |   |
| Address: 1111 South Windham Road, Lansing, MI, 22222                           |   |
| Contact Person: John Doe   | Title: Manager, Product Compliance  |
| Telephone: (999) 999-9999  | Fax: (999) 999-9998   |
| RESPONSIBLE PARTY ( <input checked="" type="checkbox"/> check appropriate box) | If you answered "NO" to Responsible Party please stop here and submit FORM I to CARB. |
| <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO            |   |

TYPE OF BUSINESS (  check all that apply)

- Manufacturer
- Importer
- Retailer
- Private label contract packager
- Custom contract packager

COMPANY MARKETING CLASSIFICATION

- International
- National
- California Statewide
- California Regional - If so, which parts:

INDEPENDENT OWNERSHIP

Is your company independently owned?

- YES       NO

If No, please provide parent company information below.

Parent Company Name:

Parent Company Address:

SIC CODES (Enter primary SIC codes)

|      |  |  |
|------|--|--|
| 5231 |  |  |
|------|--|--|

COMPANY - GROSS ANNUAL RECEIPTS

- Less than \$500,000
- Between \$500,000 and \$1 million
- Between \$1 million and \$2 million
- Between \$2 million and \$5 million
- Between \$5 million and \$10 million
- Between \$10 million and \$100 million
- More than \$100 million
- More than \$1 billion

EMPLOYEES

- Less than 10
- Between 10 and 100
- Between 100 and 250
- Between 250 and 500
- More than 500

**CERTIFICATION**

I hereby certify that, to the best of my knowledge and belief, all information entered on the Company Information Form, and Product Information Form is complete and accurate.

|                |                                    |
|----------------|------------------------------------|
| Name: John Doe | Title: Manager, Product Compliance |
| Signature: X   | Date Signed: April 30, 1998        |

|                  |               |                             |
|------------------|---------------|-----------------------------|
| FOR ARB USE ONLY | Company Code: | Total # of Pages Submitted: |
|------------------|---------------|-----------------------------|

## **FORM II**

### Product Information

\*SWA - Use "Sales Weighted Average" if you have chosen to group coatings (see instructions and calculations)

COMMENTS: N/A = Not Applicable, MS =Mineral Spirits

Page 1 of 1

Enter current page # out of the total pages submitted for FORM II. Photocopy this page as necessary.

# **FORM III**

\* Wt% is the weight % of the ingredient in the total weight of the product. List ingredients that amount to 1.0% or greater by weight of the product.

Page 1 of 1

If the ingredient list for one entry from FORM II spans multiple pages enter current page # of the total. Photocopy this page as necessary.

## FORM IV

### Ingredient Information Table - Single or Grouped Product Profile

|                         |   |  |        |
|-------------------------|---|--|--------|
| Entry # from FORM II: 2 | Speciate Volatile Organic Compounds (VOCs) and Exempt Compounds. Identify the Wt% of water. Identify the remaining Wt% of other compounds as "other". |  |        |
| Ingredient #            | Ingredient Name (Trade name if ingredient name is unknown) <i>Begin by speciating VOCs first, then speciate Exempt Compounds</i>                      | CAS #                                      | Wt. %* |
|                         | VOCs  |  |        |
| 1                       | VOC #1  | XXXX-XX-X                                  | XX     |
| 2                       | VOC #2  | XXXX-XX-X                                  | XX     |
| 3                       | VOC #3  | XXXX-XX-X                                  | XX     |
|                         |   |  |        |
|                         |   |  |        |
|                         |   |  |        |
|                         |   |  |        |
|                         |   |  |        |
|                         |   |  |        |
|                         |   |  |        |
|                         | EXEMPT COMPOUNDS (Exempt VOCs)  |  |        |
| 4                       | Exempt Compound #1  | XXXX-XX-X                                  | XX     |
|                         |   |  |        |
|                         |   |  |        |
|                         | Aggregated VOCs <1.0%   | Various                                    | XX     |
|                         | Aggregated Exempt Compounds < 1.0%  | Various                                    | XX     |
| COMMENTS                |   | WATER                                      | XX     |
|                         |   | ALL OTHER                                  | XX     |
|                         |   | TOTAL OF ALL INGREDIENTS (Must Equal 100%) | 100    |

\* Wt% is the weight % of the ingredient in the total weight of the product. List ingredients that amount to 1.0% or greater by weight of the product.

Page 1 of 1

If the ingredient list for one entry from FORM II spans multiple pages enter current page # of the total. Photocopy this page as necessary.

**ATTACHMENT A**

**Architectural and Industrial Maintenance Coatings**

1998

**SURVEY FORMS**

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California Environmental Protection Agency

**Air Resources Board**

### **CONFIDENTIAL INFORMATION SUBMITTAL FORM**

If you wish to designate any information contained in your survey data as **CONFIDENTIAL INFORMATION**, please provide the data requested below and return it with your completed survey form.

In accordance with Title 17, California Code of Regulations (CCR), sections 91000 to 91022, and the California Public Records Act (Government Code Section 6250 et seq.), the information that a company provides to the Air Resources Board (ARB) may be released (1) to the public upon request, except trade secrets which are not emissions data or other information which is exempt from disclosure or the disclosure of which is prohibited by law; and (2) to the Federal Environmental Protection Agency (EPA), which protects trade secrets as provided in Section 114C of the Clean Air Act and amendments thereto (42 USC 7401 et seq.) and in federal regulation; and (3) to other public agencies provided that those agencies preserve the protections afforded information which is identified as a trade secret, or otherwise exempt from disclosure by law (Section 39660(e)).

Trade secrets as defined in Government Code Section 6254.7 are not public records and therefore will not be released to the public. However, the California Public Records Act provides that air pollution emission data are always public records, even if the data comes within the definition of trade secrets. On the other hand, the information used to calculate information is a trade secret.

If any company believes that any of the information it may provide is a trade secret or otherwise exempt from disclosure under any other provision of law, it must identify the confidential information as such at the time of submission to the ARB and must provide the name, address, and telephone number of the individual to be consulted, if the ARB receives a request for disclosure or seeks to disclose the data claimed to be confidential. The ARB may ask the company to provide documentation of its claim of trade secret or exemption at a later date. Data identified as confidential will not be disclosed unless the ARB determines, in accordance with the above referenced regulations, that the data do not qualify for a legal exemption from disclosure. The regulations establish substantial safeguards before any such disclosure.

-----

In accordance with the provisions of Title 17, California Code of Regulations, sections 91000 to 91022, and the California Public Records Act (Government Code Sections 6250 et seq.),

**Company Name :** \_\_\_\_\_ declares that only those portions specifically identified and submitted in response to the California Air Resources Board's information request on the survey are confidential " **trade secret** " information, and requests that it be protected as such from public disclosure. All inquiries pertaining to the confidentiality of this information should be directed to the following person:

Name (print only): \_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_

Telephone #: \_\_\_\_\_

Company Address: \_\_\_\_\_

\_\_\_\_\_

**FORM I**  
**Company Information**

|  |        |
|--|--------|
| Company / Division Name:   |        |
| Address:   |        |
| Contact Person:  | Title: |
| Telephone:   | Fax:   |
| RESPONSIBLE PARTY ( <input checked="" type="checkbox"/> check appropriate box)               |        |
| <input type="checkbox"/> YES <input type="checkbox"/> NO                                     |        |
| <b>If you answered "NO" to Responsible Party please stop here and submit FORM I to CARB.</b> |        |

TYPE OF BUSINESS (  check all that apply)

- Manufacturer
- Importer
- Retailer
- Private label contract packager
- Custom contract packager

COMPANY MARKETING CLASSIFICATION

- International
- National
- California Statewide
- California Regional - If so, which parts:

SIC CODES (Enter primary SIC codes)

|  |  |  |
|--|--|--|
|  |  |  |
|--|--|--|

COMPANY - GROSS ANNUAL RECEIPTS

- Less than \$500,000
- Between \$500,000 and \$1 million
- Between \$1 million and \$2 million
- Between \$2 million and \$5 million
- Between \$5 million and \$10 million
- Between \$10 million and \$100 million
- More than \$100 million
- More than \$1 billion

EMPLOYEES

- Less than 10
- Between 10 and 100
- Between 100 and 250
- Between 250 and 500
- More than 500

INDEPENDENT OWNERSHIP

Is your company independently owned?

- YES
- NO

If No, please provide parent company information below.

Parent Company Name:

|  |
|--|
|  |
|--|

Parent Company Address:

|  |
|--|
|  |
|  |

**CERTIFICATION**

I hereby certify that, to the best of my knowledge and belief, all information entered on the Company Information Form, and Product Information Form is complete and accurate.

|            |              |
|------------|--------------|
| Name:      | Title:       |
| Signature: | Date Signed: |

|                         |               |                             |
|-------------------------|---------------|-----------------------------|
| <i>FOR ARB USE ONLY</i> | Company Code: | Total # of Pages Submitted: |
|-------------------------|---------------|-----------------------------|

# **FORM II**

## **Product Information**

\*SWA - Use "Sales Weighted Average" if you have chosen to group coatings (see instructions and calculations)

## COMMENTS

## **FORM III**

\* Wt% is the weight % of the ingredient in the total weight of the product. List ingredients that amount to 1.0% or greater by weight of the product.

Page \_\_\_\_\_ of \_\_\_\_\_

If the ingredient list for one entry from FORM II spans multiple pages enter current page # of the total. Photocopy this page as necessary.

## FORM IV

### Ingredient Information Table - Single or Grouped Product Profile

| Entry # from FORM II: | Speciate Volatile Organic Compounds (VOCs) and Exempt Compounds. Identify the Wt% of water. Identify the remaining Wt% of the product as "other". | CAS #   | Wt. %* |
|-----------------------|---|---|--------|
| Ingredient #          | Ingredient Name (Trade name if ingredient name is unknown) <i>Begin by speciating VOCs first, then speciate Exempt Compounds</i>                  |   |        |
|                       | <b>VOCs</b>   |   |        |
|                       |   |   |        |
|                       |   |   |        |
|                       |   |   |        |
|                       |   |   |        |
|                       |   |   |        |
|                       |   |   |        |
|                       |   |   |        |
|                       |   |   |        |
|                       | <b>EXEMPT COMPOUNDS</b> (Exempt VOCs)   |   |        |
|                       |   |   |        |
|                       |   |   |        |
|                       |   |   |        |
|                       | <b>Aggregated VOCs &lt; 1.0%</b>  | Various   |        |
|                       | <b>Aggregated Exempt Compounds &lt; 1.0%</b>  | Various   |        |
| COMMENTS              |   | <b>WATER</b>                                      |        |
|                       |   | <b>ALL OTHER</b>                                  |        |
|                       |   | <b>TOTAL OF ALL INGREDIENTS</b> (Must Equal 100%) |        |

\* Wt% is the weight % of the ingredient in the total weight of the product. List ingredients that amount to 1.0% or greater by weight of the product.

Page \_\_\_\_\_ of \_\_\_\_\_

If the ingredient list for one entry from FORM II spans multiple pages enter current page # of the total. Photocopy this page as necessary.

**ATTACHMENT B**

**CHEMICAL ABSTRACT SERVICE (CAS) NUMBER AND SYNONYMS**

The following list of compounds and their associated CAS numbers was compiled from the U.S. EPA survey of Consumer Products database. This database had a field for the VOC's in each product and a field for their associated CAS numbers. These fields were compiled into a separate database, sorted, corrected, and duplicate items were removed. All synonyms (different name, same CAS #) that were not redundant were retained.

In addition, this list of compounds includes species profiles that were obtained from water-borne and solvent-borne coatings under ARB Contract # 93-319, "Improvement of Species Profiles for Architectural and Industrial Maintenance Coating Operations."

The list is by no means all inclusive, but provides a useful reference when the CAS number for a product ingredient cannot be found. We encourage individuals responding to the survey to use their product ingredient's listed CAS numbers when they are available. This is especially important when listing the hydrocarbons, because many ingredients may have the same name, but different CAS numbers. For example, kerosene, mineral spirits, naphtha, petroleum distillate and others may each have several different CAS numbers reflecting differences in product grade.

If access to the internet is available survey respondents can take advantage of chemical databases available via the World Wide Web. One useful example of this is the Chemfinder WebServer Project. The Chemfinder Webserver is a chemical database that performs searches using one or all of the following criteria: name, formula, molecular weight, melting point, boiling point, CAS #, and structure. If the search finds a match detailed information is provided about the compound (e.g., synonyms, specific gravity, flash point, MSDS, DOT #, etc.). The last pages of this Attachment include an example search performed using Chemfinder Webserver.

## CARB CHEMICAL NAME/CAS NUMBER LIST

| Chemical Name   | Alphabetical Order | CAS #    | By CAS Number                                    | CAS # |
|---|--------------------|----------|--|-------|
| #2 Diesel Fuel  |                    | 68476346 | 1-Acetoxy-2-butoxyethane (2-Butoxyethyl acetate) | 11272 |
| (1,1,1) Trichloroethane   |                    | 71556    | Methanol   | 49120 |
| (MCPP) Dimethylamine salt                                       |                    | 32351705 | cis-Decalin                                      | 49316 |
| 1 - Octadecanol   |                    | 112925   | trans-Decalin                                    | 49327 |
| 1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-butane (C4F9OCH3)        |                    | *****    | FORMALDEHYDE                                     | 50000 |
| 1,1,1,2,3,3-Hexafluoropropane (HFC-236ea)                       |                    | 431630   | Formalin Formaldehyde                            | 50000 |
| 1,1,1,2,3,4,4,5,5,5-Decafluoropentane (HFC 43-10mee)            |                    | *****    | Lactic Acid                                      | 50215 |
| 1,1,1,2,3-Pentafluoropropane (HFC-245eb)                        |                    | 431312   | Lactic AcidEDTA                                  | 50215 |
| 1,1,1,2-Tetrafluoroethane (HFC-134a)                            |                    | 811972   | Sorbitol (D-Gluticolic, C6H14O6)                 | 50704 |
| 1,1,1,3,3-Hexafluoropropane (HFC-236fa)                         |                    | 690391   | SORBITOL (D-Gluticolic, C6H14O6)                 | 50704 |
| 1,1,1,3,3-Pentafluorobutane (HFC-365mfc)                        |                    | 406586   | Piperonyl Butoxide                               | 51036 |
| 1,1,1,3,3-Pentafluoropropane (HFC-245fa)                        |                    | 460731   | Piperonyl Butoxide, Technical                    | 51036 |
| 1,1,1-oxybisethane  |                    | 60297    | Technical piperonyl butoxide                     | 51036 |
| 1,1,1-trichloroethane   |                    | 79016    | Trichlorfon                                      | 52686 |
| 1,1,1-Trichloroethane (Methyl chloroform)                       |                    | 71556    | Nitroglycerin (1,2,3-propanetriol, trinitrate)   | 55630 |
| 1,1,1-Trifluoro-2,2-dichloroethane (HCFC-123)                   |                    | 306832   | Dipropylene Triamine                             | 56188 |
| 1,1,1-Trifluoroethane (HFC-143a)                                |                    | 420462   | Carbon tetrachloride                             | 56235 |
| 1,1,2,2,3-Pentafluoropropane (HFC-245ca)                        |                    | 679867   | 1,2,3-Propanetriol                               | 56815 |
| 1,1,2,2-Tetrachloroethylene                                     |                    | 127184   | Glycerin   | 56815 |
| 1,1,2,2-Tetrafluoroethane (HFC-134)                             |                    | 359353   | Vegetable Glycerin                               | 56815 |
| 1,1,2,3,3-Pentafluoropropane (HFC-245ea)                        |                    | 24270664 | CARBAMIDE  | 57136 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)                 |                    | 76131    | 1,2 Propanediol                                  | 57556 |
| 1,1,2-Trichloroethylene   |                    | 79016    | Propylene Glycol                                 | 57556 |
| 1,1,3,3-Tetramethylcyclohexane                                  |                    | 24770647 | Lindane (hexachlorocyclohexane)                  | 58899 |
| 1,1-dichloro-1-fluoroethane (HCFC-141b)                         |                    | 25167888 | Ethylene Diamine Tetra Acetate                   | 60004 |
| 1,1-Difluoroethane (HFC-152a)                                   |                    | 75376    | ETHYLENE DIAMINE TETRA ACETATE                   | 60004 |
| 1,1-Methylene-bis-4-Isocyanobenzene)                            |                    | 101688   | 1,1,1-oxybisethane                               | 60297 |
| 1,2 Propanediol   |                    | 57556    | Diethyl Ether                                    | 60297 |
| 1,2,3-Propanetriol  |                    | 56815    | Ethyl Ether                                      | 60297 |
| 1,2,3-Trimethylbenzene  |                    | 526738   | Dimethoate                                       | 60515 |
| 1,2,4-Trimethylbenzene  |                    | 95636    | Dimethoate - Technical                           | 60515 |
| 1,2,4-Trimethylbenzene (pseudo-Cumene)                          |                    | 95636    | Dimethoate Insecticide Concentrate               | 60515 |
| 1,2,4-Trimethylcyclohexane                                      |                    | 2234755  | Dichlorvos                                       | 62737 |
| 1,2-Butylene Oxide (ethyl oxirane)                              |                    | 106887   | 1-Naphthyl-n-methylcarb-amate                    | 63252 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC-114)                |                    | 76142    | Carbaryl   | 63252 |
| 1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a)                  |                    | 354234   | Carbaryl - Technical                             | 63252 |
| 1,2-Ethanediol  |                    | 107211   | cis-1,3-Dimethylcyclohexane                      | 63840 |
| 1,3,5-Trimethylbenzene (Mesitylene)                             |                    | 108678   | Tetrasodium EDTA                                 | 64028 |
| 1,3-Butylene Glycol   |                    | 107880   | Alcohol  | 64175 |
| 1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)          |                    | 507551   | ALCOHOL SDA                                      | 64175 |
| 1,3-Dimethyl-5-ethylbenzene                                     |                    | 934747   | Denatured Ethyl Alcohol                          | 64175 |
| 1,4 Diglycidyloxybutane   |                    | 2425798  | denatured ethyl alcohol (w/ camphor)             | 64175 |
| 1,4-BENZENEDIOL   |                    | 123319   | ETHANOL  | 64175 |
| 1,4-bis-bromoacetoxy-2-butene                                   |                    | 20679587 | Ethyl Alcohol                                    | 64175 |
| 1,4-Dichlorobenzene   |                    | 106467   | Ethyl Alcohol SDA                                | 64175 |
| 1,4-dioxane   |                    | 123911   | SD Alcohol 38                                    | 64175 |
| 1,6-DIISOCYANTO-HEXANE  |                    | 822061   | SD Alcohol 40                                    | 64175 |
| 1-(2-butoxyethoxy)-2-propanol                                   |                    | 124163   | SD-Alcohol                                       | 64175 |
| 1-Acetoxy-2-butoxyethane (2-Butoxyethyl acetate)                |                    | 11272    | SDA  | 64175 |
| 1-Amino-2-Propanol  |                    | 78966    | SDA-38B  | 64175 |
| 1-Butanol   |                    | 71363    | SDA-40 (Denatured Alcohol)                       | 64175 |
| 1-Butoxy-2-propanol   |                    | 5131668  | SDA-40B Alcohol (Ethanol)                        | 64175 |
| 1-Chloro-1,1-difluoroethane (HCFC-142b)                         |                    | 75683    | Formic acid                                      | 64186 |
| 1-Chloro-1-fluoroethane (HCFC-151a)                             |                    | 1615754  | FORMIC ACID (90%)                                | 64186 |
| 1-Chloro-4-trifluoromethyl benzene (Parachlorobenzotrifluoride) |                    | 98566    | Methanoic acid                                   | 64186 |
| 1-Ethoxy-1,1,2,2,3,3,4,4,4-nonfluorobutane (C4F9OC2H5)          |                    | *****    | Acetic Acid                                      | 64197 |
| 1-Ethyl-2-methylbenzene (o-Ethyltoluene)                        |                    | 611143   | Acetic Acid 100%                                 | 64197 |
| 1-Ethyl-3-methylbenzene (m-Ethyltoluene)                        |                    | 620144   | ACETIC ACID GLACIAL                              | 64197 |
| 1-Ethyl-4-methylbenzene (p-Ethyltoluene)                        |                    | 622968   | Methanol   | 67561 |
| 1-Methoxy-2-propanol  |                    | 107982   | Methanol Alcohol                                 | 67561 |
| 1-Methoxy-2-Propanol Acetate                                    |                    | 108656   | Methyl Alcohol                                   | 67561 |
| 1-Methoxy-2-Propyl acetate                                      |                    | 108656   | 2-Propanol                                       | 67630 |
| 1-METHYL - 4 -(1-METHYLETHENYL) CYCLOHEXENE                     |                    | 59892725 | Dimethyl Carbinol                                | 67630 |
| 1-METHYL-1-PHENYLETHYL HYDROPEROXIDE                            |                    | 80159    | IPA  | 67630 |
| 1-Methyl-2-propylcyclohexane                                    |                    | 4291796  | Isopropanol                                      | 67630 |
| 1-METHYL-2-PYRROLIDONE  |                    | 872504   | Isopropyl Alcohol                                | 67630 |

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|--|----------|--------------------|---|-------|
| 1-Methyl-3-ethylbenzene (m-Ethyltoluene)                         | 620144   |                    | Isopropyl Alcohol, Anhydrous                    | 67630 |
| 1-Methyl-4-isopropylcyclohexane (p-Menthane)                     | 99821    |                    | 2-Propanone                                     | 67641 |
| 1-Naphthyl-n-methylcarbamate                                     | 63252    |                    | Acetone   | 67641 |
| 1-Nitropropane   | 108032   |                    | Acetone USP                                     | 67641 |
| 1-PENTANOL   | 71410    |                    | Dimethyl Ketone                                 | 67641 |
| 1-phenyl methanol  | 100516   |                    | Propanone                                       | 67641 |
| 1-Propanamine, 3-(Triethoxysilyl)-                               | 919302   |                    | CHLOROFORM                                      | 67663 |
| 1-Propanol   | 71238    |                    | Dimethyl Sulfoxide                              | 67685 |
| 12-Hydroxy Octadecanoic Acid                                     | 3159624  |                    | Thioglycolic Acid                               | 68111 |
| 12-Hydroxy Octadecanoic Acid Methyl Ester                        | 141131   |                    | Dimethyl Formamide                              | 68122 |
| 12-Hydroxy Octadecanoic Acid Monolithium Salt                    | 7620771  |                    | N, N-dimethylformamide                          | 68122 |
| 12-HYDROXY-OCTADECANOIC ACID                                     | 3159624  |                    | Tetrapropyl Orthosilicate                       | 68209 |
| 2 (3H)-Furanone, Dihydro   | 96480    |                    | 1-Propanol                                      | 71238 |
| 2,2,4 TMO  | 3236531  |                    | n-Propanol                                      | 71238 |
| 2,2,4 Trimethylhexamethylenediamine                              | 3236531  |                    | N-Propyl Alcohol                                | 71238 |
| 2,2,4-TRIMETHYL-1,3-MONOISOBUTYRATE                              | 25265774 |                    | Propyl Alcohol                                  | 71238 |
| 2,2,4-Trimethyl-1,3-pentanediol                                  | 144194   |                    | 1-Butanol                                       | 71363 |
| 2,2,4-Trimethyl-1,3-pentanediol di-isobutyrate (Texanol iso-buty | 6846500  |                    | Butanol   | 71363 |
| 2,2,4-Trimethyl-1,3-pentanediol-iso-butyrate                     | 25265774 |                    | Butanol   | 71363 |
| 2,2-dichloro-1,1-difluoroethyl methyl ether                      | 76380    |                    | Butyl Alcohol                                   | 71363 |
| 2,4 Dichlorophenoxy Acetic Acid                                  | 2008391  |                    | n-butanol                                       | 71363 |
| 2,4,4 trimethylhexamethylenediamine                              | 3236542  |                    | n-Butyl Alcohol                                 | 71363 |
| 2,4-D Dimethylamine salt   | 2008391  |                    | Normal Butyl Alcohol                            | 71363 |
| 2,4-dichlorophenoxy acetic acid                                  | 94757    |                    | 1-PENTANOL                                      | 71410 |
| 2,4-DIISOCYANTO-1-METHYLBENZENE                                  | 584849   |                    | (1,1,1) Trichloroethane                         | 71556 |
| 2,5-PYRROLIDINEDIONE   | 123568   |                    | 1,1,1-Trichloroethane (Methyl chloroform)       | 71556 |
| 2,6-Dimethylnonane   | 17302282 |                    | Aerothene TT                                    | 71556 |
| 2-(2-Butoxyethoxy)-Ethanol                                       | 112345   |                    | Methyl chloroform (1,1,1-Trichloroethane)       | 71556 |
| 2-(2-Ethoxyethoxy) ethanol                                       | 111900   |                    | Methoxychlor                                    | 72435 |
| 2-(2-methyl-4-chlorophenoxy)-propionic acid                      | 93652    |                    | Methane   | 74828 |
| 2-(Difluoromethoxymethyl)-1,1,1,2,3,3-heptafluoropropane         | *****    |                    | Ethane  | 74840 |
| 2-(Difluoromethoxymethyl)-1,1,1,2,3,3-heptafluoropropane         | *****    |                    | Ethylene  | 74851 |
| 2-(Ethoxydifluoromethyl)-1,1,1,2,3,3-heptafluoropropane          | *****    |                    | Propane   | 74986 |
| 2-(Ethoxydifluoromethyl)-1,1,1,2,3,3-heptafluoropropane          | *****    |                    | PROPELLANT A-108 - PROPANE                      | 74986 |
| 2-(Methylethoxy)Phenol Methylcarbamate                           | 114261   |                    | Dichloromethane (Methylene chloride)            | 75092 |
| 2-(Tert-butylamino)-4-Chloro-6-Ethylamino-s-triazi               | 5915413  |                    | Methylene Chloride                              | 75092 |
| 2-Aminoethanol   | 141435   |                    | Methylene chloride (Dichloromethane)            | 75092 |
| 2-Bromo-2-chloro-1,1,1-trifluoroethane                           | 151677   |                    | Difluoromethane (HFC-32)                        | 75105 |
| 2-Butanol  | 78922    |                    | HFC-32 (Difluoromethane)                        | 75105 |
| 2-Butanone   | 78933    |                    | Ethylene Oxide (Oxirane)                        | 75218 |
| 2-BUTENEDIOIC ACID   | 110167   |                    | 2-METHYL PROPANE                                | 75285 |
| 2-Butoxyethanol  | 111762   |                    | Isobutane                                       | 75285 |
| 2-Butoxyethyl Acetate  | 112072   |                    | Isobutane (A-31)                                | 75285 |
| 2-Chloro-1,1,2-tetrafluoroethane (HCFC-124)                      | 2837890  |                    | ISOPROPYLAMINE                                  | 75310 |
| 2-CYANO-2-PROPENOIC ACID ETHYL ESTER                             | 7085850  |                    | 1,1-Difluoroethane (HFC-152a)                   | 75376 |
| 2-Ethanolhexanol distillates                                     | 68609687 |                    | DIFLUOROETHANE                                  | 75376 |
| 2-Ethoxyethanol  | 110805   |                    | HFC-152a (1,1-Difluoroethane)                   | 75376 |
| 2-ETHOXYETHYL ACETATE  | 111159   |                    | CFC-12 (Dichlorodifluoromethane)                | 75434 |
| 2-ETHYL OXY-BIS-HEXANOIC ACID                                    | 18268707 |                    | Dichlorodifluoromethane (CFC-12)                | 75434 |
| 2-Ethyl-3 Ethanoxpropionate                                      | 763699   |                    | CHLORODIFLUOROMETHANE                           | 75456 |
| 2-Ethylhexyl Nitrate   | 27248967 |                    | Chlorodifluoromethane (HCFC-22)                 | 75456 |
| 2-Heptanone  | 110430   |                    | FREON 22 SOLVENT                                | 75456 |
| 2-Methoxy-1-Propanol   | 1589475  |                    | HCFC-22 (Chlorodifluoromethane)                 | 75456 |
| 2-Methoxy-1-Propanol Acetate                                     | 70657704 |                    | HFC-23 (Trifluoromethane)                       | 75467 |
| 2-METHOXYETHYLACETATE  | 110496   |                    | Trifluoromethane (HFC-23)                       | 75467 |
| 2-Methoxymethyllethoxy Propanol                                  | 34590948 |                    | NITROMETHANE                                    | 75525 |
| 2-Methyl decane  | 6975980  |                    | T-Butyl Alcohol                                 | 75650 |
| 2-Methyl heptane   | 592278   |                    | TERT-BUTYL ALCOHOL                              | 75650 |
| 2-Methyl nonane  | 871830   |                    | 1-Chloro-1,1-difluoroethane (HCFC-142b)         | 75683 |
| 2-METHYL PROPANE   | 75285    |                    | HCFC-142b (1-Chloro-1,1-difluoroethane)         | 75683 |
| 2-Methyl-1-Propanol  | 78831    |                    | CFC-11 (Trichlorofluoromethane)                 | 75694 |
| 2-Methyl-2,4-Pentanediol   | 107415   |                    | Trichlorofluoromethane (CFC-11)                 | 75694 |
| 2-METHYL-2-PROPENOIC ACID MONOESTER                              | 27813021 |                    | Dichlorodifluoromethane                         | 75718 |
| 2-methyl-4-isothiazoline-3-one                                   | 2682204  |                    | T-Amyl Alcohol                                  | 75854 |
| 2-METHYLHEXANE   | 591764   |                    | Chloropicrin (trichloronitromethane)            | 76062 |
| 2-MethylNaphthalene  | 91576    |                    | 1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113) | 76131 |
| 2-methylpentane  | 107835   |                    | CFC-113 (1,1,2-Trichloro-1,2,2-trifluoroethane) | 76131 |

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|--|--------------------|----------|---|-------|
| 2-Nitropropane   |                    | 79469    | FREON TF  | 76131 |
| 2-Pentanone (Methyl propyl ketone)                                 |                    | 107879   | Trichlorotrifluoroethane (CFC-113)                  | 76131 |
| 2-PHENYLHYDRAZIDE ACETIC ACID                                      |                    | 114830   | 1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC-114)    | 76142 |
| 2-Propanol   |                    | 67630    | CFC-114 (1,2-Dichloro-1,1,2,2-tetrafluoroethane)    | 76142 |
| 2-propanol, 1-methoxy-   |                    | 107982   | CFC-115 (Chloropentafluoroethane)                   | 76153 |
| 2-propanol, 1-[2-(2-methoxy-1-methylethoxy)-1-m...                 |                    | 20324338 | Chloropentafluoroethane (CFC-115)                   | 76153 |
| 2-Propanol-1-Butoxy  |                    | 5131668  | camphor   | 76222 |
| 2-Propanone  |                    | 67641    | 2,2-dichloro-1,1-difluoroethyl methyl ether         | 76380 |
| 2-PROPOENOIC ACID  |                    | 79107    | ATROSOL 504 (citrus acid?)                          | 77929 |
| 2-Propoxyethanol   |                    | 2807309  | Tributoxy Ethyl Phosphate                           | 78513 |
| 2251 Oil (or 2263 Oil @ 64742-47-8)                                |                    | 64742149 | TRIBUTOXY ETHYL PHOSPHATE                           | 78513 |
| 3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)             |                    | 422560   | Tributoxyethyl Phosphate                            | 78513 |
| 3,6-dichloro-o-anisic acid (Benzoic acid, 3,6 dichloro-2-methyo... |                    | 1918009  | Isophorone  | 78591 |
| 3-4 Dimethyl- 2,6 Dinitribenzenamine                               |                    | 40487421 | 2-Methyl-1-Propanol                                 | 78831 |
| 3-ETHYOXY PROPANOIC ACID ETHYL ESTER                               |                    | 763699   | Isobutanol  | 78831 |
| 3-Methyl decane  |                    | 13151343 | Isobutyl Alcohol                                    | 78831 |
| 3-METHYLHEXANE   |                    | 589344   | 2-Butanol   | 78922 |
| 3-METHYLMETHOXYBUTANOL   |                    | 56539663 | Butanol   | 78922 |
| 3-methylpentane  |                    | 96140    | BUTYL ALCOHOL                                       | 78922 |
| 4,6-Dichloro-2-Trichloromethylpyridine                             |                    | 1129197  | Sec-butanol   | 78922 |
| 4-Hydroxy-4-Methyl-2-Pentanone                                     |                    | 123422   | sec-Butyl alcohol                                   | 78922 |
| 4-Isopropenyl 1-Methylcyclohexane                                  |                    | 5989275  | 2-Butanone  | 78933 |
| 4-Methyl decane  |                    | 2847725  | MEK   | 78933 |
| 4-Methyl heptane   |                    | 589537   | Methyl Ethyl Ketone                                 | 78933 |
| 4-Methyl nonane  |                    | 17301949 | 1-Amino-2-Propanol                                  | 78966 |
| 4-Methyl-2-Pentanol  |                    | 108112   | 1,1,1-trichloroethane                               | 79016 |
| 4-Methyl-2-Pentanone   |                    | 108101   | 1,1,2-Trichloroethylene                             | 79016 |
| 5 Bromo-3-Sec-Butyl Methyluracil                                   |                    | 314409   | Trichloroethylene                                   | 79016 |
| 5-chloro-2-methyl-4-isothiazoline-3-one                            |                    | 26172554 | 2-PROPOENOIC ACID                                   | 79107 |
| 5-Methyl decane  |                    | 13151354 | ACRYLIC ACID  | 79107 |
| 9-Octadecenoic Acid (Z) Ammonium Salts                             |                    | 544605   | Glycolic Acid                                       | 79141 |
| 99.5% Monochlorotoluene  |                    | 95498    | Hydroxyacetic Acid                                  | 79141 |
| a,a,a-trifluoro-s,6-dinitro-n,n-dipropyl-p-toluide                 |                    | 1582098  | PERACETIC ACID                                      | 79210 |
| A-70 Hydrocarbon Propellant  |                    | 68476857 | NITROETHANE   | 79243 |
| Acenaphthane   |                    | 82329    | Methacrylic Acid (2-methyl, 2-propenoic acid)       | 79414 |
| Acetamide, N, N'-(ethenylmethyl-silylene)Bis-N-Me                  |                    | 50791872 | 2-Nitropropane                                      | 79469 |
| Acetic Acid  |                    | 64197    | 1-METHYL-1-PHENYLETHYL HYDROPEROXIDE                | 80159 |
| Acetic Acid 100%   |                    | 64197    | Methyl methacrylate                                 | 80626 |
| ACETIC ACID ETHYL ESTER  |                    | 141786   | Dexpanthenol  | 81130 |
| ACETIC ACID GLACIAL  |                    | 64197    | Acenaphthane  | 82329 |
| ACETIC ACID, BUTYL ESTER   |                    | 123864   | Dibutyl Phthalate                                   | 84742 |
| Acetone  |                    | 67641    | Parachlorometoxylenol                               | 88040 |
| Acetone USP  |                    | 67641    | N-vinyl-2-pyrrolidone                               | 88120 |
| Acetophenone   |                    | 98862    | O-Nitrotoluene                                      | 88722 |
| Acrolein   |                    | 107028   | Menthol   | 89781 |
| ACRYLIC ACID   |                    | 79107    | ortho-phenylphenol                                  | 90437 |
| Aerothene TT   |                    | 71556    | Decahydronaphthalene                                | 91178 |
| Alcohol  |                    | 64175    | Decalin   | 91178 |
| Alcohol Ethoxylate   |                    | 68439509 | Decalin (Decahydronaphthalene)                      | 91178 |
| ALCOHOL SDA  |                    | 64175    | Naphthalene   | 91203 |
| ALIPHATIC DISTILLATE   |                    | 64741737 | 2-MethylNaphthalene                                 | 91576 |
| Aliphatic Hydrocarbon  |                    | 64742963 | Methyl Benzoate                                     | 93583 |
| Aliphatic Hydrocarbon  |                    | 64742977 | 2-(2-methyl-4-chlorophenoxy)-propionic acid         | 93652 |
| Aliphatic Hydrocarbon  |                    | 64771728 | Dimethylamine Salt of MCPP                          | 93652 |
| ALIPHATIC HYDROCARBON  |                    | 64741657 | Benzocaine (Ethyl p-aminobenzoate)                  | 94097 |
| ALIPHATIC HYDROCARBON  |                    | 64742899 | SAFROLE #   | 94597 |
| Aliphatic Hydrocarbon (Stoddard Type)                              |                    | 8052413  | 2,4-dichlorophenoxy acetic acid                     | 94757 |
| aliphatic petroleum distillate                                     |                    | 64742967 | Diethylamine salt of 2,4-dichlorophenoxyacetic acid | 94757 |
| Aliphatic Petroleum Distillate                                     |                    | 64742887 | Benzotriazole                                       | 95147 |
| Aliphatic petroleum distillates                                    |                    | 8008206  | Xylene (o)  | 95476 |
| Aliphatic petroleum distillates                                    |                    | 64741657 | 99.5% Monochlorotoluene                             | 95498 |
| Aliphatic petroleum distillates                                    |                    | 68334305 | CHLOROTOLUENE                                       | 95498 |
| Aliphatic Petroleum Hydrocarbon                                    |                    | 64741442 | O-CHLOROTOLUENE                                     | 95498 |
| Alkali Surfactant  |                    | 61790123 | O- Dichlorobenzene                                  | 95501 |
| Alkali Surfactant NM   |                    | 64972196 | ORTHO DICHLOROBENZENE                               | 95501 |
| Alkyl Acetate  |                    | 90438792 | 1,2,4-Trimethylbenzene                              | 95636 |
| Alkyl Dimethyl Benzyl Ammonium Chloride                            |                    | 68391015 | 1,2,4-Trimethylbenzene (pseudo-Cumene)              | 95636 |

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|---|----------|---|---------------|--------|
| Alkyl Dimethyl Ethyl Benzyl Ammonium Chloride             | 68956790 | 3-methylpentane   |               | 96140  |
| Alkyl dimethylbenzylammonium chloride                     | 68391015 | DIHYDROXY ACETONE   |               | 96264  |
| Alkyl Glycidyl Ether                                      | 68609972 | 2 (3H)-Furanone, Dihydro  |               | 96480  |
| Alkyl Olefin Sulfonate                                    | 68439576 | Butyrolactone   |               | 96480  |
| Alkyl Olefin Sulfonate, Sodium Salt                       | 68439576 | gamma-Butyrolactone   |               | 96480  |
| Alkylaryl Sulfonate                                       | 26264051 | Eugenol   |               | 97530  |
| Alkylaryl Sulfonate Isopropylamine Salt                   | 26264051 | Isobutyl Isobutyrate  |               | 97858  |
| Alkylation Naphtha, heavy                                 | 64741657 | Isobutyl methacrylate   |               | 97869  |
| Alkylphenol Ethanol                                       | 9016459  | TETRAHYDROFURFURYL ALCOHOL                                      |               | 97994  |
| Alkylphenol Ethoxylate                                    | 9016459  | Furfuryl Alcohol  |               | 98000  |
| Alpha terpineol   | 98555    | Alpha terpineol   |               | 98555  |
| Amino Methyl Propanediol                                  | 115695   | pine oil  |               | 98555  |
| Aminomethyl Propanol                                      | 124685   | TERPENE ALCOHOLS  |               | 98555  |
| Ammonium Lactate (Propanoic acid, 2-hydroxy-monoammonium) | 515980   | 1-Chloro-4-trifluoromethyl benzene (Parachlorobenzotrifluoride) |               | 98566  |
| Ammonium Lauryl Sulfate                                   | 2235543  | Parachlorobenzotrifluoride (PCBTF)                              |               | 98566  |
| Ammonium Thioglycolate                                    | 5421465  | PCBTF (Parachlorobenzotrifluoride)                              |               | 98566  |
| Amyl Acetate  | 628637   | Acetophenone  |               | 98862  |
| arcosolv pm   | 107982   | Niacinamide (3-pyridine carboxamide)                            |               | 98920  |
| Armak 1194  | 61791262 | 1-Methyl-4-isopropylcyclohexane (p-Menthane)                    |               | 99821  |
| Aromatic 150  | 25551137 | N,N-DIMETHYL-P-TOLUIDINE  |               | 99978  |
| Aromatic 200 Solvent                                      | 68477316 | DIETHYLMAMINOETHANOL  |               | 100378 |
| Aromatic Hydrocarbon Solvent                              | 64741680 | Ethyl Benzene   |               | 100414 |
| AROMATIC HYDROCARBON SOLVENT                              | 68477316 | STYRENE (ethenyl benzene)                                       |               | 100425 |
| Aromatic Petroleum Distillate                             | 64741986 | 1-phenyl methanol   |               | 100516 |
| AROMATIC PETROLEUM DISTILLATE                             | 68477316 | Benzoyl Alcohol   |               | 100516 |
| Aromatic Petroleum Distillates                            | 64742907 | Benzyl Alcohol  |               | 100516 |
| AROMATIC SOLVENT  | 13330207 | RESIN A-BENZYL  |               | 100516 |
| Asphalt   | 8052424  | Benzaldehyde  |               | 100527 |
| Atrazine - Tech   | 1912249  | 1,1-Methylene-bis-4-Isocyanobenzene)                            |               | 101688 |
| ATROSOL 504 (citrus acid?)                                | 77929    | Triethanolamine   |               | 102716 |
| Bardac 208M Lonza   | 68424955 | n-Propylbenzene   |               | 103651 |
| Bardac MB-50]   | 139082   | Propylbenzene   |               | 103651 |
| Barrium Sulfinate   | 61790485 | DIETHYLENE GLYCOL PHENYL ETHER                                  |               | 104687 |
| Base Oil  | 8030309  | CAPROLACTAM (2H-Azepin-2-one, hexahydro)                        |               | 105602 |
| Benefin   | 1861401  | XYLENE (p)  |               | 106423 |
| Benomyl   | 17804352 | Xylo (p)  |               | 106423 |
| Bensulide   | 741562   | 1,4-Dichlorobenzene   |               | 106467 |
| Benzaldehyde  | 100527   | p-dichlorobenzene   |               | 106467 |
| Benzalkonium Chloride                                     | 8001545  | Para-dichlorobenzene  |               | 106467 |
| Benzocaine (Ethyl p-aminobenzoate)                        | 94097    | Dimethyl Succinate (Butanedioic acid, dimethyl ester)           |               | 106650 |
| Benzotriazole   | 95147    | 1,2-Butylene Oxide (ethyl oxirane)                              |               | 106887 |
| Benzoyl Alcohol   | 100516   | Butane  |               | 106978 |
| Benzyl Acetate  | 140114   | Hydrocarbon Propellant A-17                                     |               | 106978 |
| Benzyl Alcohol  | 100516   | N-BUTANE  |               | 106978 |
| benzyl ammonium chloride                                  | 68424851 | Acrolein  |               | 107028 |
| Benzylkonium Chloride (w/ 20% ethanol)                    | 68424851 | Ethylene Dichloride   |               | 107062 |
| Betaine   | 61789400 | ETHYLENE DIAMINE  |               | 107153 |
| Bismuth Octoate   | 67874719 | 1,2-Ethanediol  |               | 107211 |
| Boiled Linseed Oil  | 8001261  | Ethylene Glycol   |               | 107211 |
| BTC-2125M 80% Stephan Company                             | 68391015 | 2-Methyl-2,4-Pentanediol  |               | 107415 |
| BTC-8249 Stephan Company                                  | 68391015 | Hexylene Glycol   |               | 107415 |
| BTC-8358 Stephan Company                                  | 8001545  | Hexylene glycol (2-Methyl-2,4-pentane diol)                     |               | 107415 |
| Butane  | 106978   | PROPYLENE GLYCOL METHYL ETHER                                   |               | 107556 |
| Butane, branched and linear                               | 68513655 | 2-methylpentane   |               | 107835 |
| Butanediol diglycidyl ether                               | 2425798  | Isohexane   |               | 107835 |
| Butanol   | 71363    | 2-Pentanone (Methyl propyl ketone)                              |               | 107879 |
| Butanol   | 78922    | METHYL N-PROPYL KETONE  |               | 107879 |
| Butoxyethanol   | 111762   | Methyl propyl ketone (2-Pentanone)                              |               | 107879 |
| ButoxyPropanol  | 57018527 | 1,3-Butylene Glycol   |               | 107880 |
| Buturol   | 71363    | Butylene Glycol   |               | 107880 |
| Butyl acetate   | 123864   | 1-Methoxy-2-propanol  |               | 107982 |
| Butyl acetate   | 540885   | 2-propanol, 1-methoxy-  |               | 107982 |
| Butyl Alcohol   | 71363    | arcosolv pm   |               | 107982 |
| BUTYL ALCOHOL   | 78922    | Dowanol PM Glycol Ether   |               | 107982 |
| Butyl Carbitol  | 112345   | GLYCOL ETHER PM   |               | 107982 |
| Butyl cellosolve  | 111762   | Methoxypropanol   |               | 107982 |
| Butyl Cellosolve Acetate                                  | 112072   | PROPYLENE GLYCOL METHYL ETHER                                   |               | 107982 |

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| Chemical Name  | Alphabetical Order | CAS # | By CAS Number                             | CAS #  |
|--|--------------------|-------|---|--------|
| Butyl Glycidyl Ether (Oxirane, butoxymethyl)             | 2426086            |       | Propylene Glycol Monomethyl Ether         | 107982 |
| Butylene Glycol  | 107880             |       | Dimethylethanamine                        | 108010 |
| Butyrolactone  | 96480              |       | 1-Nitropropane                            | 108032 |
| C-8/C-10 Alcohol   | 68603156           |       | Vinyl acetate                             | 108054 |
| C10-15 Saturated Hydrocarbon                             | 64742478           |       | 4-Methyl-2-Pentanone                      | 108101 |
| C10-C11 PARAFFINS CYCLO-PARAFFINS                        | 64741657           |       | Hexane                                    | 108101 |
| C11-12 Isoparaffin                                       | 68551177           |       | Methyl Isobutyl Ketone                    | 108101 |
| C11-13 ISOPARAFFIN                                       | 64742489           |       | MIBK                                      | 108101 |
| C11-13 Isoparaffin Solvent                               | 68551177           |       | 4-Methyl-2-Pentanol                       | 108112 |
| C12 Alpha Olefin   | 25378227           |       | Methyl amyl alcohol                       | 108112 |
| C12-C15 Ethoxylated Alcohol                              | 68131395           |       | Isopropyl Acetate                         | 108214 |
| C3-C4 Alkane Propellant                                  | 68475592           |       | Xylene                                    | 108383 |
| C3-C4 Propellant   | 68475592           |       | M-cresol                                  | 108394 |
| C4F9OC2H5 (1-Ethoxy-1,1,2,2,3,3,4,4,4-nonfluorobutane)   | *****              |       | Meta Cresol 36/38                         | 108394 |
| C4F9OCH3 (1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-butane) | *****              |       | 1-Methoxy-2-Propanol Acetate              | 108656 |
| c6-oxo Alcohol Acetate                                   | 88230357           |       | 1-Methoxy-2-Propyl acetate                | 108656 |
| C9-11 ISOPARAFFIN  | 68551166           |       | Dowanol PM Acetate                        | 108656 |
| C9-C12 Alkylbenzenes                                     | 68515253           |       | Ethyleneglycol Monomethyl Ether Acetate   | 108656 |
| C9-C12 Saturated Hydrocarbons                            | 64741657           |       | GLYCOL ETHER ACETATE                      | 108656 |
| camphor  | 76222              |       | METHOXY PROPANOL ACETATE                  | 108656 |
| Camphor  | 21368683           |       | PM Acetate                                | 108656 |
| CAMPHOR  | 464493             |       | Propylene Glycol Monomethyl Ether Acetate | 108656 |
| Camphor Oil  | 8008513            |       | Propylene Glycol Methyl Ether Acetate     | 108656 |
| Camphor yellow   | 8008513            |       | 1,3,5-Trimethylbenzene (Mesitylene)       | 108678 |
| CAPROLACTAM (2H-Azepin-2-one, hexahydro)                 | 105602             |       | Diisobutyl Ketone                         | 108838 |
| Captan   | 133062             |       | Methylcyclohexane                         | 108872 |
| Captan, Technical  | 133062             |       | METHYL BENZENE                            | 108883 |
| CARBAMIDE  | 57136              |       | TOLUENE                                   | 108883 |
| Carbaryl   | 63252              |       | CHLOROBENZENE                             | 108907 |
| Carbaryl - Technical                                     | 63252              |       | Monochlorobenzene                         | 108907 |
| Carbital DE  | 111900             |       | Cyclohexanol                              | 108930 |
| Carbitol   | 111900             |       | Cyclohexanone                             | 108941 |
| Carbitol Solvent   | 111900             |       | Phenol                                    | 108952 |
| Carbon Dioxide   | 124389             |       | PHENOL (90%)                              | 108952 |
| Carbon tetrachloride                                     | 56235              |       | Tetraethylene Glycol Dimethacrylate       | 109171 |
| Carsamide CA   | 61789193           |       | Dimethylamino Propylamine                 | 109557 |
| CASTOR OIL   | 8001794            |       | n-Propyl acetate                          | 109604 |
| Cellosolve (EGEE)  | 110805             |       | PROPYL ACETATE                            | 109604 |
| Cellosolve Acetate                                       | 111159             |       | N-pentane                                 | 109660 |
| Cellosolve Solvent                                       | 110805             |       | Pentane                                   | 109660 |
| CFC-11 (Trichlorofluoromethane)                          | 75694              |       | ETHYLENE GLYCOL METHYL ETHER              | 109864 |
| CFC-113 (1,1,2-Trichloro-1,2,2-trifluoroethane)          | 76131              |       | Ethyleneglycol Monomethyl Ether           | 109864 |
| CFC-114 (1,2-Dichloro-1,1,2,2-tetrafluoroethane)         | 76142              |       | Methyl Cellosolve                         | 109864 |
| CFC-115 (Chloropentafluoroethane)                        | 76153              |       | METHYLAL, DIMETHOXYMETHANE                | 109875 |
| CFC-12 (Dichlorodifluoromethane)                         | 75434              |       | Tetrahydrofuran                           | 109999 |
| CHLOROBENZENE  | 108907             |       | Methyl Isoamyl Ketone                     | 110123 |
| CHLORODIFLUOROMETHANE                                    | 75456              |       | 2-BUTENEDIOIC ACID                        | 110167 |
| Chlorodifluoromethane (HCFC-22)                          | 75456              |       | ISOBUTYL ACETATE                          | 110190 |
| Chlorofluoromethane (HCFC-31)                            | 593704             |       | Isobutyl Acetone                          | 110190 |
| CHLOROFORM   | 67663              |       | Ethylbenzene                              | 110414 |
| Chloropentafluoroethane (CFC-115)                        | 76153              |       | 2-Heptanone                               | 110430 |
| Chloropicrin (trichloronitromethane)                     | 76062              |       | Methyl Amyl Ketone                        | 110430 |
| CHLOROTOLUENE  | 95498              |       | Methyl n-amyl Ketone                      | 110430 |
| Chlorpyrifos   | 291882             |       | 2-METHOXYETHYLACETATE                     | 110496 |
| Chlorpyrifos   | 2921882            |       | Methyl Cellosolve Acetate (EGMEA)         | 110496 |
| Chlorpyrifos-methyl                                      | 5598130            |       | HEXANE                                    | 110543 |
| CIS 1,3-Dichloropropene                                  | 10061015           |       | n-hexane                                  | 110543 |
| cis-1,3-Dimethylcyclohexane                              | 63840              |       | Textile Spirits                           | 110543 |
| cis-Decalin  | 49316              |       | Ethyleneglycol Dimethyl Ether             | 110714 |
| Citrus Distillate  | 5989275            |       | 2-Ethoxyethanol                           | 110805 |
| Citrus Terpenes  | 5989275            |       | Cellosolve (EGEE)                         | 110805 |
| Clopyralid Monoethanolamine salt                         | 57754855           |       | Cellosolve Solvent                        | 110805 |
| Clove Oil  | 8000348            |       | Ethoxyethanol                             | 110805 |
| Cocamidopropyl Amino Betane                              | 61789400           |       | Ethyleneglycol Monoethyl Ether            | 110805 |
| Coco Diethanolamide                                      | 67785131           |       | GLYCOL ETHER EE                           | 110805 |
| Coco Diethanolamide-sulfonate                            | 67785119           |       | Cyclohexane                               | 110827 |
| Cocoamidopropyl Amine Oxide 35%                          | 68155099           |       | MORPHOLINE                                | 110918 |

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|--|--------------------|---|---------------|-------|
| Cocoamidopropyl Betaine                              | 70851079           | 2-ETHOXYETHYL ACETATE                   | 111159        |       |
| Coconut Diethanolamine                               | 68603429           | Cellosolve Acetate                      | 111159        |       |
| Copper Naphthenate                                   | 1338029            | Ethylene Glycol Monoethyl Ether Acetate | 111159        |       |
| Corvus Oil 00519-13                                  | 64742558           | Glutaraldehyde (Pantanediol)            | 111308        |       |
| Cottonseed Oil (Gossypium Hirsutum)                  | 8001294            | DETA                                    | 111400        |       |
| Cresol   | 1319773            | diethylene triamine                     | 111400        |       |
| CRESOL 174   | 1319773            | Diethylenetriamine                      | 111400        |       |
| CRESOLS, MIXED                                       | 1319773            | Diethanolamine                          | 111422        |       |
| Cresylic acid  | 1319773            | DIETHYLENE GLYCOL                       | 111466        |       |
| Crude Citrus Limonene                                | 5989275            | N-OCTANE                                | 111659        |       |
| Cyclohexane  | 110827             | Octane                                  | 111659        |       |
| Cyclohexanol   | 108930             | 2-Butoxyethanol                         | 111762        |       |
| Cyclohexanone  | 108941             | Butoxyethanol                           | 111762        |       |
| Cyclomethicone                                       | 69430246           | Butyl cellosolve                        | 111762        |       |
| Cyclomethicone (DC 244)                              | 69430246           | EB                                      | 111762        |       |
| Cyclomethicone (DC245/345)                           | 69430246           | Ethanol, 2-butoxy                       | 111762        |       |
| CYCLOMETHICONE TETRAMER                              | 69430246           | Ethylene Glycol Monobutyl ether         | 111762        |       |
| Cythion Insecticide Concentrate                      | 121755             | Ethylene Glycol N-Butyl Ether           | 111762        |       |
| D Limonene   | 5989275            | GLYCOL ETHER DPM                        | 111762        |       |
| D'LIMONENE   | 7705148            | GLYCOL ETHER EB                         | 111762        |       |
| d-Limonene   | 68647723           | N-BUTYL ETHER OF ETHYLENE GLYCOL        | 111762        |       |
| D-Limonene   | 68917577           | Poly Solv EB                            | 111762        |       |
| D-LIMONENE   | 58917577           | DEG Methyl Ether                        | 111773        |       |
| D-Tert Butyl Phenyl Glycidyl Ether                   | 3101608            | diethylene glycol methyl ether          | 111773        |       |
| Damar gum  | 9000162            | Diethylene Glycol Monomethyl Ether      | 111773        |       |
| DDVP   | 620737             | Glycol Ether DM                         | 111773        |       |
| DE   | 111900             | METHYL CARBITOL                         | 111773        |       |
| Decahydronaphthalene                                 | 91178              | Polysolve DM                            | 111773        |       |
| Decalin  | 91178              | Nonane                                  | 111842        |       |
| Decalin (Decahydronaphthalene)                       | 91178              | Octanol                                 | 111875        |       |
| decamethylcyclopentasiloxane                         | 541026             | 2-(2-Ethoxyethoxy) ethanol              | 111900        |       |
| DEET   | 134623             | Carbitol DE                             | 111900        |       |
| DEET (Di Ethyl Toluamide)                            | 134623             | Carbitol                                | 111900        |       |
| DEG Methyl Ether                                     | 111773             | Carbitol Solvent                        | 111900        |       |
| Denatured Ethyl Alcohol                              | 64175              | DE                                      | 111900        |       |
| denatured ethyl alcohol (w/ camphor)                 | 64175              | diethylene glycol ethyl ether           | 111900        |       |
| Deodorized Kerosene                                  | 8008206            | Diethylene Glycol Monoethyl Ether       | 111900        |       |
| Deodorized Kerosene                                  | 64742967           | Ethoxydiglycol                          | 111900        |       |
| DETA   | 111400             | Glycol Ether De-Low Grav.               | 111900        |       |
| Dexpanthenol   | 81130              | Glycol Ether DR-Lo Grav.                | 111900        |       |
| Di (2- Ethylhexyl Phthalate)                         | 117817             | Poly Solv DE                            | 111900        |       |
| Diacetone alcohol                                    | 123422             | Diethylene Glycol Dimethyl Ether        | 111966        |       |
| Dialkyl methyl benzylammonium chloride               | 73049759           | Diethylene Glycol Butyl Ethers          | 111981        |       |
| Diazinon   | 333415             | DIETHYLENE GLYCOL BUTYL ETHERS          | 111981        |       |
| Diazinon MG-8  | 333415             | 2-Butoxyethyl Acetate                   | 112072        |       |
| Diazinon MG-8 Insecticide Concentrate                | 333415             | Butyl Cellosolve Acetate                | 112072        |       |
| Dibutyl Phthalate                                    | 84742              | ETHYLENE GLYCOL BUTYL ETHER ACETATE     | 112072        |       |
| Dicetyl Diammonium                                   | 1812539            | Methyl Nonyl Ketone                     | 112129        |       |
| Dichlorodifluoromethane                              | 75718              | Triethylene Glycol                      | 112276        |       |
| Dichlorodifluoromethane (CFC-12)                     | 75434              | TRIETHYLENE GLYCOL                      | 112276        |       |
| Dichloromethane (Methylene chloride)                 | 75092              | 2-(2-Butoxyethoxy)-Ethanol              | 112345        |       |
| Dichlorvos   | 62737              | Butyl Carbitol                          | 112345        |       |
| Diecy Dimethyl Ammonium Chloride                     | 7173515            | Diethylene glycol butyl ether           | 112345        |       |
| Diesel Fuel  | 68476346           | Diethylene Glycol Monobutyl Ether       | 112345        |       |
| Diesel Fuel #2                                       | 64742442           | Diethylene Glycol N-Butyl Ether         | 112345        |       |
| Diethanolamine                                       | 111422             | Glycol Ether (Butyl Carbitol)           | 112345        |       |
| Diethyl Ether  | 60297              | GLYCOL ETHER (BUTYL CARBITOL)           | 112345        |       |
| Diethylamine Salt of 2,4-dichlorophenoxy acetic acid | 2008391            | Glycol Ether DB                         | 112345        |       |
| Diethylamine salt of 2,4-dichlorophenoxyacetic acid  | 94757              | Poly Solv DB                            | 112345        |       |
| DIETHYLAMINOETHANOL                                  | 100378             | DIETHYLENE GLYCOL DIETHYL ETHER         | 112367        |       |
| Diethylene Glycol                                    | 114666             | Undecenoic Acid                         | 112389        |       |
| DIETHYLENE GLYCOL                                    | 111466             | Dodecane                                | 112403        |       |
| Diethylene glycol butyl ether                        | 112345             | Triethylene Glycol Dimethyl Ether       | 112492        |       |
| Diethylene Glycol Butyl Ethers                       | 111981             | Tetraethylene Pentamine                 | 112572        |       |
| DIETHYLENE GLYCOL BUTYL ETHERS                       | 111981             | Tetraethylene Glycol                    | 112607        |       |
| DIETHYLENE GLYCOL DIETHYL ETHER                      | 112367             | Oleic Acid (9-octadecenoic acid)        | 112801        |       |
| Diethylene Glycol Dimethyl Ether                     | 111966             | 1 - Octadecanol                         | 112925        |       |

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| diethylene glycol ethyl ether                               |                    | 111900   | 2-(Methylethoxy)Phenol Methylcarbamate                           | 114261 |
| diethylene glycol methyl ether                              |                    | 111773   | Diethylene Glycol  | 114666 |
| DIETHYLENE GLYCOL METHYL ETHERS                             |                    | 89399280 | 2-PHENYLHYDRAZIDE ACETIC ACID                                    | 114830 |
| Diethylene Glycol Monobutyl Ether                           |                    | 112345   | Dimethyl Ether   | 115106 |
| Diethylene Glycol Monoethyl Ether                           |                    | 111900   | DME  | 115106 |
| Diethylene Glycol Monomethyl Ether                          |                    | 111773   | Dymel A  | 115106 |
| Diethylene Glycol N-Butyl Ether                             |                    | 112345   | METHYL ETHER   | 115106 |
| DIETHYLENE GLYCOL PHENYL ETHER                              |                    | 104687   | Thiodan - Technical  | 115297 |
| diethylene triamine   |                    | 111400   | Amino Methyl Propanediol   | 115695 |
| Diethylenetriamine  |                    | 111400   | Triphenol Phosphate  | 115866 |
| DIFLUOROETHANE  |                    | 75376    | Di (2-Ethylhexyl Phthalate)                                      | 117817 |
| Difluoromethane (HFC-32)                                    |                    | 75105    | Diocyl Phthalate   | 117840 |
| Diglycolamine   |                    | 929066   | METHYL SALICYLATE  | 119368 |
| DIHYDROXY ACETONE   |                    | 96264    | o-benzyl-p-chlorophenol  | 120321 |
| Diisobutyl Ketone   |                    | 108838   | M-Pyrol (methyl pyrrolidine)                                     | 120945 |
| Diisopropyl Adipate (hexanedioic acid, bis (1-methylhexyl)) |                    | 6938949  | N-Methylpyrrolidone  | 120945 |
| Dimethicone Copolyol  |                    | 64365237 | Pyrocide Intermediate 5192 (Pyrethrin)                           | 121211 |
| Dimethoate  |                    | 60515    | Triethylamine  | 121448 |
| Dimethoate - Technical                                      |                    | 60515    | Cythion Insecticide Concentrate                                  | 121755 |
| Dimethoate Insecticide Concentrate                          |                    | 60515    | Malathion  | 121755 |
| Dimethyl Adipate (hexanedioic acid, methyl ester)           |                    | 627930   | Malathion TE   | 121755 |
| Dimethyl Benzene  |                    | 1330207  | Malathion - Technical  | 121755 |
| Dimethyl Carbinol   |                    | 67630    | Stearalkonium chloride   | 122190 |
| Dimethyl Ether  |                    | 115106   | TRIETHYL PHOSPHITE   | 122521 |
| Dimethyl Formamide  |                    | 68122    | Diocyl sebacate (Decanedioic acid, bis 2-ethyl hexyl ester)      | 122623 |
| Dimethyl Glutarate (Pentanedioic acid, dimethyl ester)      |                    | 1119400  | ETHYLENE GLYCOL PHENYL ETHER                                     | 122996 |
| Dimethyl Ketone   |                    | 67641    | Ethylene Glycol, Monophenyl Ether                                | 122996 |
| DIMETHYL PHENOL PHOSPHATE                                   |                    | 25155231 | Glycol Ether EPH   | 122996 |
| DIMETHYL SILOXANE   |                    | 63148629 | Phenoxyethanol   | 122996 |
| Dimethyl Succinate (Butanedioic acid, dimethyl ester)       |                    | 106650   | Phenylglycol ether   | 122996 |
| Dimethyl Sulfoxide  |                    | 67685    | 1,4-BENZENEDIOL  | 123319 |
| Dimethylamine   |                    | 124403   | Hydroquinone   | 123319 |
| Dimethylamine Salt of Dicamba                               |                    | 1918009  | 4-Hydroxy-4-Methyl-2-Pentanone                                   | 123422 |
| Dimethylamine Salt of MCPP                                  |                    | 93652    | Diacetone alcohol  | 123422 |
| Dimethylamino Propylamine                                   |                    | 109557   | 2,5-PYRROLIDINEDIONE   | 123568 |
| Dimethylethanolamine  |                    | 108010   | ACETIC ACID, BUTYL ESTER   | 123864 |
| Diocyl Phthalate  |                    | 117840   | Butyl acetate  | 123864 |
| Diocyl sebacate (Decanedioic acid, bis 2-ethyl hexyl ester) |                    | 122623   | n-Butyl Acetate  | 123864 |
| DIPENTENE (P-MENTHA-1,8-DIENE ?)                            |                    | 138863   | 1,4-dioxane  | 123911 |
| Dipropylene glycol  |                    | 25265718 | 1-(2-butoxyethoxy)-2-propanol                                    | 124163 |
| Dipropylene glycol  |                    | 25265718 | Carbon Dioxide   | 124389 |
| dipropylene glycol ethyl ether                              |                    | 3459948  | Dimethylamine  | 124403 |
| dipropylene glycol methyl ether                             |                    | 3459948  | Aminomethyl Propanol   | 124685 |
| DIPROPYLENE GLYCOL METHYL ETHER                             |                    | 12002254 | Isobornyl Acetate (Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-ac | 125122 |
| Dipropylene glycol monomethyl ether                         |                    | 13459948 | Isobornyl Acetate  | 125123 |
| Dipropylene Glycol Methyl Ether                             |                    | 34590948 | Tris (hydroxymethyl) nitromethane                                | 126114 |
| Dipropylene Triamine  |                    | 561188   | Neopentyl glycol (2,2-Dimethyl-1,3-Propanediol)                  | 126307 |
| Disodium Cocamide Mipa Sulfosuccinate                       |                    | 68515651 | 1,1,2,2-Tetrachloroethylene                                      | 127184 |
| Disodium ethylene bisdithiocarbamate                        |                    | 142596   | Perchloroethylene  | 127184 |
| Disodium Laureth Sulfosuccinate                             |                    | 39354455 | Tetrachloroethylene  | 127184 |
| Distillates (Petroleum), Solvent-Rf Lt.Nap                  |                    | 64741895 | Potassium dimethyldithiocarbamate                                | 128030 |
| DME   |                    | 115106   | Sodium Dimethyldithiocarbamate                                   | 128041 |
| Dodecane  |                    | 112403   | Captan   | 133062 |
| Dodecyclbenzenesulfonate                                    |                    | 25155300 | Captan, Technical  | 133062 |
| Dodecyl Benzene Sulfonic Acid                               |                    | 27176870 | DEET   | 134623 |
| Dodecylbenzene Sulfonate                                    |                    | 27176870 | DEET (Di Ethyl Toluamide)  | 134623 |
| Dow Corning 344   |                    | 69430246 | N,N-Diethyl-M-Toluamide  | 134623 |
| DOWANOL DPM   |                    | 34590948 | METHYL CYANOACRYLATE   | 137053 |
| Dowanol PM Acetate  |                    | 108656   | HAMPOSYL L-30  | 137166 |
| Dowanol PM Glycol Ether                                     |                    | 107982   | Hydrocarbon Detergent  | 137166 |
| Dursban   |                    | 2921882  | Tetramethylthiuran Disulfide                                     | 137268 |
| Dursban (Chlorpyrifos)                                      |                    | 2921882  | Thiram - Technical   | 137268 |
| Dursban H.F. Insecticide Concentrate                        |                    | 2921882  | DIPENTENE (P-MENTHA-1,8-DIENE ?)                                 | 138863 |
| Dursban HF  |                    | 2921882  | Bardac MB-50]  | 139082 |
| Dymel A   |                    | 115106   | TEA-Laurel Sulfate   | 139968 |
| EB  |                    | 111762   | Benzyl Acetate   | 140114 |
| EEP Solvent   |                    | 763699   | 12-Hydroxy Octadecanoic Acid Methyl Ester                        | 141131 |

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|---|--------------------|----------|--|--------|
| EKTASOLVE                                     |                    | 2807309  | 2-Aminoethanol   | 141435 |
| Ektasolve EP                                  |                    | 2807309  | Ethanolamine   | 141435 |
| Emcol 14                                      |                    | 71012107 | ACETIC ACID ETHYL ESTER                                  | 141786 |
| Epoxidized Soybean Oil                        |                    | 8013078  | Ethyl Acetate  | 141786 |
| Epoxy Resin                                   |                    | 28064144 | MESITYL OXIDE (3-penten-2-one, 4-methyl?)                | 141797 |
| Ethalfluralin                                 |                    | 55283686 | Disodium ethylene bisdithiocarbamate                     | 142596 |
| Ethane  |                    | 74840    | Ethylene (bis) dithiocarbamate, disodium salt            | 142596 |
| Ethanol                                       |                    | 8024451  | NABAM (Disodium Ethylene Bis Dithiocar-                  | 142596 |
| ETHANOL                                       |                    | 64175    | Heptane  | 142825 |
| Ethanol (39C SDA)                             |                    | 8024451  | n-Heptane  | 142825 |
| ETHANOL (METHANOL DENATURED)                  |                    | 8013523  | Sodium Oleate  | 143191 |
| Ethanol SDA 39C                               |                    | 8024451  | TRIETHYLENE GLYCOL MONOBUTYL ETHER                       | 143226 |
| Ethanol, 2-butoxy                             |                    | 111762   | Oleyl Alcohol  | 143282 |
| Ethanolamine                                  |                    | 141435   | 2,2,4-Trimethyl-1,3-pentanediol                          | 144194 |
| Ethanolamine Sulfite                          |                    | 15535292 | Sodium Laureth Sulfate                                   | 151213 |
| Ethyox Sulfate, Neodol 25-3S                  |                    | 68586342 | Sodium Lauryl Sulfate                                    | 151213 |
| Ethoxydiglycol                                |                    | 111900   | Wilcolate A  | 151213 |
| Ethoxyethanol                                 |                    | 110805   | 2-Bromo-2-chloro-1,1,1-trifluoroethane                   | 151677 |
| Ethoxylated Alcohol C12-15                    |                    | 68131395 | Halothane  | 151677 |
| Ethoxylated Alcohol C12-16                    |                    | 68551122 | TRIETHYLENEDIAMINE                                       | 280579 |
| Ethoxylated Alcohol C12-16                    |                    | 68551122 | Chlorpyrifos   | 291882 |
| Ethyl 3-Ethoxypropionate                      |                    | 763699   | 1,1,1-Trifluoro-2,2-dichloroethane (HCFC-123)            | 306832 |
| ETHYL 3ETHOXYPROPIONATE                       |                    | 7636699  | HCFC-123 (1,1,1-Trifluoro-2,2-dichloroethane)            | 306832 |
| Ethyl Acetate                                 |                    | 141786   | 5 Bromo-3-Sec-Butyl Methyluracil                         | 314409 |
| Ethyl Alcohol                                 |                    | 64175    | Diazinon   | 333415 |
| Ethyl Alcohol                                 |                    | 97702170 | Diazinon MG-8  | 333415 |
| Ethyl Alcohol SDA                             |                    | 64175    | Diazinon MG-8 Insecticide Concentrate                    | 333415 |
| Ethyl Benzene                                 |                    | 100414   | O, O-dimethyl-O-phosphorothiate                          | 333476 |
| Ethyl Ester of PVM/MA Copolymer (w/ethanol)   |                    | 25087063 | Ethylfluoride (HFC-161)                                  | 353366 |
| Ethyl Ether                                   |                    | 60297    | HFC-161 (Ethylfluoride)                                  | 353366 |
| Ethyl-2-cyanoacrylate                         |                    | 7085850  | 1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a)           | 354234 |
| Ethylbenzene                                  |                    | 110414   | HCFC-123a (1,2-Dichloro-1,1,2-trifluoroethane)           | 354234 |
| Ethylcyanoacrylate                            |                    | 7085850  | HFC-125 (Pentafluoroethane)                              | 354336 |
| Ethylene                                      |                    | 74851    | Pentafluoroethane (HFC-125)                              | 354336 |
| Ethylene (bis) dithiocarbamate, disodium salt |                    | 142596   | 1,1,2,2-Tetrafluoroethane (HFC-134)                      | 359353 |
| ETHYLENE DIAMINE                              |                    | 107153   | HFC-134 (1,1,2,2-Tetrafluoroethane)                      | 359353 |
| Ethylene Diamine Tetra Acetate                |                    | 60004    | 1,1,1,3,3-Pentafluorobutane (HFC-365mfc)                 | 406586 |
| ETHYLENE DIAMINE TETRA ACETATE                |                    | 60004    | HFC-365mfc (1,1,1,3,3-Pentafluorobutane)                 | 406586 |
| Ethylene Dichloride                           |                    | 107062   | 1,1,1-Trifluoroethane (HFC-143a)                         | 420462 |
| Ethylene Glycol                               |                    | 107211   | HFC-143a (1,1,1-Trifluoroethane)                         | 420462 |
| ETHYLENE GLYCOL BUTYL ETHER ACETATE           |                    | 112072   | 3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)   | 422560 |
| Ethylene Glycol Diethyl Ether                 |                    | 629141   | HCFC-225ca (3,3-Dichloro-1,1,1,2,2-pentafluoropropane)   | 422560 |
| Ethylene Glycol Dimethyl Ether                |                    | 110714   | 1,1,1,2,3-Pentafluoropropane (HFC-245eb)                 | 431312 |
| ETHYLENE GLYCOL METHYL ETHER                  |                    | 109864   | HFC-245eb (1,1,1,2,3-Pentafluoropropane)                 | 431312 |
| Ethylene Glycol Monobutyl ether               |                    | 111762   | 1,1,1,2,3,3-Hexafluoropropane (HFC-236ea)                | 431630 |
| Ethylene Glycol Monoethyl Ether               |                    | 110805   | HFC-236ea (1,1,1,2,3,3-Hexafluoropropane)                | 431630 |
| Ethylene Glycol Monoethyl Ether Acetate       |                    | 111159   | 1,1,1,3,3-Pentafluoropropane (HFC-245fa)                 | 460731 |
| Ethylene Glycol Monomethyl Ether              |                    | 109864   | HFC-245fa (1,1,1,3,3-Pentafluoropropane)                 | 460731 |
| Ethylene Glycol Monomethyl Ether Acetate      |                    | 108656   | CAMPHOR  | 464493 |
| Ethylene Glycol Monopropyl Ether              |                    | 2807309  | Indan  | 496117 |
| Ethylene Glycol N-Butyl Ether                 |                    | 111762   | 1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)   | 507551 |
| ETHYLENE GLYCOL PHENYL ETHER                  |                    | 122996   | HCFC-225cb (1,3-Dichloro-1,1,2,2,3-pentafluoropropane)   | 507551 |
| Ethylene Glycol, Monophenyl Ether             |                    | 122996   | Methylene Bis (4-Cyclohexylisocyanate)                   | 512431 |
| Ethylene Glycol-n-propyl Ether                |                    | 2807309  | Ammonium Lactate (Propanoic acid, 2-hydroxy-monoammonium | 515980 |
| Ethylene Oxide (Oxirane)                      |                    | 75218    | 1,2,3-Trimethylbenzene                                   | 526738 |
| Ethylene/vinyl acetate polymer                |                    | 24937788 | tetrahydro-3,5-dimethyl1-2-H-1,3,5-thiadiazine-2-e       | 533744 |
| Ethylfluoride (HFC-161)                       |                    | 353366   | Butyl acetate  | 540885 |
| Ethyltoluenes                                 |                    | 25550145 | decamethylcyclopentasiloxane                             | 541026 |
| Eucalptus                                     |                    | 8000484  | 9-Octadecenoic Acid (Z) Ammonium Salts                   | 544605 |
| Eugenol                                       |                    | 97530    | Methyl isopropyl ketone                                  | 563804 |
| Fatty Diethanolamide                          |                    | 68604353 | 2,4-DIISOCYANTO-1-METHYLBENZENE                          | 584849 |
| Ferbam  |                    | 14484641 | 3-METHYLHEXANE   | 589344 |
| FORMALDEHYDE                                  |                    | 50000    | 4-Methyl heptane   | 589537 |
| Formalin Formaldehyde                         |                    | 50000    | N-Butyl Propionate                                       | 590012 |
| Formic acid                                   |                    | 64186    | 2-METHYLHEXANE   | 591764 |
| FORMIC ACID (90%)                             |                    | 64186    | 2-Methyl heptane   | 592278 |
| FREON 22 SOLVENT                              |                    | 75456    | Chlorofluoromethane (HCFC-31)                            | 593704 |

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|--|--------------------|----------|---|---------|
| FREON TF   |                    | 76131    | HCFC-31 (Chlorofluoromethane)                         | 593704  |
| fuel oil no. 2   |                    | 68476302 | 1-Ethyl-2-methylbenzene (o-Ethyltoluene)              | 611143  |
| Furfuryl Alcohol                                       |                    | 98000    | 1-Ethyl-3-methylbenzene (m-Ethyltoluene)              | 620144  |
| Gamma-Aminopropyltriethoxysilane                       |                    | 919302   | 1-Methyl-3-ethylbenzene (m-Ethyltoluene)              | 620144  |
| Gamma-Aminopropyl Triethoxysilane                      |                    | 11919302 | DDVP  | 620737  |
| gamma-Butyrolactone                                    |                    | 96480    | 1-Ethyl-4-methylbenzene (p-Ethyltoluene)              | 622968  |
| Gantrez ES225  |                    | 25087063 | Dimethyl Adipate (hexanedioic acid, methyl ester)     | 627930  |
| Glutaraldehyde (Pantanediol)                           |                    | 111308   | Amyl Acetate  | 628637  |
| Glycereth-7  |                    | 31694550 | N-amyl acetate  | 628637  |
| Glycereth-7  |                    | 31694550 | Primary Amyl Acetate                                  | 628637  |
| Glycerin   |                    | 56815    | Ethylene Glycol Diethyl Ether                         | 629141  |
| Glyceryl Thioglycolate                                 |                    | 30618849 | Glycol Methylene Ether (1,3-Dioxolane?)               | 646060  |
| Glycol Ether (Butyl Carbitol)                          |                    | 112345   | 1,1,2,2,3-Pentafluoropropane (HFC-245ca)              | 679867  |
| GLYCOL ETHER (BUTYL CARBITOL)                          |                    | 112345   | HFC-245ca (1,1,2,2,3-Pentafluoropropane)              | 679867  |
| GLYCOL ETHER ACETATE                                   |                    | 108656   | Silicic Acid (HASIO4), Tetrapropyl                    | 682019  |
| Glycol Ether DB  |                    | 112345   | Tetrapropyl Orthosilicate                             | 682019  |
| Glycol Ether De-Low Grav.                              |                    | 111900   | 1,1,1,3,3-Hexafluoropropane (HFC-236fa)               | 690391  |
| Glycol Ether DM  |                    | 111773   | HFC-236fa (1,1,1,3,3-Hexafluoropropane)               | 690391  |
| Glycol Ether DPM                                       |                    | 34590948 | Isopropylcyclohexane                                  | 696297  |
| GLYCOL ETHER DPM                                       |                    | 111762   | Bensulide   | 741562  |
| Glycol Ether DR-Lo Grav.                               |                    | 111900   | S-O,O-Diisopropyl phosphorodithioate                  | 741582  |
| GLYCOL ETHER EB  |                    | 111762   | 2-Ethyl-3 Ethanopropionate                            | 763699  |
| GLYCOL ETHER EE  |                    | 110805   | 3-ETHYOXY PROPANOIC ACID ETHYL ESTER                  | 763699  |
| Glycol Ether EP  |                    | 2807309  | EEP Solvent   | 763699  |
| Glycol Ether EPH                                       |                    | 122996   | Ethyl 3-Ethoxypropionate                              | 763699  |
| GLYCOL ETHER PM  |                    | 107982   | Propanoic Acid, 3-Ethoxy-Ethyl Ester                  | 763699  |
| Glycol Methylene Ether (1,3-Dioxolane?)                |                    | 646060   | 1,1,1,2-Tetrafluoroethane (HFC-134a)                  | 811972  |
| Glycolic Acid  |                    | 79141    | HFC-134a (1,1,1,2-Tetrafluoroethane)                  | 811972  |
| Gum Turpentine   |                    | 8006642  | 1,6-DIISOCYANTO-HEXANE                                | 822061  |
| GUM TURPENTINE   |                    | 9005907  | Pentachloronitrobenzene                               | 826886  |
| Halothane  |                    | 151677   | HYDROXYETHYL METHACRYLATE                             | 868779  |
| Halso AG125 Monochlorotoluene                          |                    | 25168052 | 2-Methyl nonane                                       | 871830  |
| HAMPOSYL L-30  |                    | 137166   | 1-METHYL-2-PYRROLIDONE                                | 872504  |
| Han Solvent  |                    | 64742069 | m-pyrrol  | 872504  |
| HAN-857  |                    | 64742069 | N-Methyl -2- Pyrrolidone                              | 872504  |
| HCFC-123 (1,1,1-Trifluoro-2,2-dichloroethane)          |                    | 306832   | N-Methylpyrrolidone                                   | 872504  |
| HCFC-123a (1,2-Dichloro-1,1,2-trifluoroethane)         |                    | 354234   | 1-Propanamine, 3-(Triethoxysilyl)-                    | 919302  |
| HCFC-124 (2-Chloro-1,1,1,2-tetrafluoroethane)          |                    | 2837890  | Gamma-Aminopropyltriethoxysilane                      | 919302  |
| HCFC-141b (1,1-Dichloro-1-fluoroethane)                |                    | 25167888 | Diglycolamine   | 929066  |
| HCFC-142b (1-Chloro-1,1-difluoroethane)                |                    | 75683    | 1,3-Dimethyl-5-ethylbenzene                           | 934747  |
| HCFC-151a (1-Chloro-1-fluoroethane)                    |                    | 1615754  | N-Phosphonomethylglycine                              | 1071836 |
| HCFC-22 (Chlorodifluoromethane)                        |                    | 75456    | Dimethyl Glutarate (Pantanediol acid, dimethyl ester) | 1119400 |
| HCFC-225ca (3,3-Dichloro-1,1,1,2,2-pentafluoropropane) |                    | 422560   | Undecane  | 1120214 |
| HCFC-225cb (1,3-Dichloro-1,1,1,2,3-pentafluoropropane) |                    | 507551   | 4,6-Dichloro-2-Trichloromethylpyridine                | 1129197 |
| HCFC-31 (Chlorofluoromethane)                          |                    | 593704   | Slane, Trimethoxymethyl-                              | 1185553 |
| Heavy Alkylate Naphtha                                 |                    | 64741657 | Xylenols - mixed                                      | 1300716 |
| Heavy Alkylate Naphtha                                 |                    | 64742657 | Sodium Xylene Sulfonate                               | 1300727 |
| Heavy Aromatic Naphtha Solvent                         |                    | 64742945 | Cresol  | 1319773 |
| Heptane  |                    | 142825   | CRESOL 174  | 1319773 |
| HEXAMETHYLENEDIAMINE                                   |                    | 6898775  | CRESOLS, MIXED  | 1319773 |
| HEXANE   |                    | 110543   | Cresylic acid   | 1319773 |
| Hexone   |                    | 108101   | Dimethyl Benzene                                      | 1330207 |
| Hexylene Glycol  |                    | 107415   | Xylene  | 1330207 |
| Hexylene glycol (2-Methyl-2,4-pentane diol)            |                    | *****    | Xylene (Mixture)                                      | 1330207 |
| HFC 43-10mee (1,1,1,2,3,4,4,5,5,5-Decafluoropentane)   |                    | 354336   | Xylene in technical - Methyl Parathion                | 1330207 |
| HFC-125 (Pentafluoroethane)                            |                    | 359353   | Xylene Mixed O, M, & P Isomers                        | 1330207 |
| HFC-134 (1,1,2,2-Tetrafluoroethane)                    |                    | 811972   | Sodium Lauryl Sulfate Ether                           | 1335724 |
| HFC-134a (1,1,1,2-Tetrafluoroethane)                   |                    | 420462   | Copper Naphthenate                                    | 1338029 |
| HFC-143a (1,1,1-Trifluoroethane)                       |                    | 75376    | Lead Chromate (C.I. pigment yellow 34)                | 1344372 |
| HFC-152a (1,1-Difluoroethane)                          |                    | 353366   | n-Propoxypropanol                                     | 1569013 |
| HFC-161 (Ethylfluoride)                                |                    | 75467    | a,a,a-trifluoro-s,6-dinitro-n,n-dipropyl-p-toluide    | 1582098 |
| HFC-23 (Trifluoromethane)                              |                    | 431630   | Trifluralin   | 1582098 |
| HFC-236ea (1,1,1,2,3,3-Hexafluoropropane)              |                    | 690391   | 2-Methoxy-1-Propanol                                  | 1589475 |
| HFC-236fa (1,1,1,3,3-Hexafluoropropane)                |                    | 679867   | Prometon  | 1610180 |
| HFC-245ca (1,1,2,2,3-Pentafluoropropane)               |                    | 24270664 | Prometon - Technical                                  | 1610180 |
| HFC-245ea (1,1,2,3,3-Pentafluoropropane)               |                    | 431312   | 1-Chloro-1-fluoroethane (HCFC-151a)                   | 1615754 |
| HFC-245eb (1,1,2,3-Pentafluoropropane)                 |                    |          | HCFC-151a (1-Chloro-1-fluoroethane)                   | 1615754 |

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|--|--------------------|---|---------------|-------|
| HFC-245fa (1,1,1,3,3-Pentafluoropropane)                               | 460731             | Methyl Tertiary Butyl Ether                                       | 1634044       |       |
| HFC-32 (Difluoromethane)   | 75105              | Propylcyclohexane   | 1678928       |       |
| HFC-365mfc (1,1,1,3,3-Pentafluorobutane)                               | 406586             | Isobutylcyclohexane   | 1678984       |       |
| High Flash Naphtha   | 68476799           | Dicetyl Diammonium  | 1812539       |       |
| Hydrocarbon Detergent  | 137166             | Benefin   | 1861401       |       |
| HYDROCARBON PROPELLANT   | 68476868           | Atrazine - Tech   | 1912249       |       |
| Hydrocarbon Propellant A-17  | 106978             | 3,6-dichloro-o-anisic acid (Benzoic acid, 3,6 dichloro-2-methoxy) | 1918009       |       |
| Hydrocarbon resin  | 68003510           | Dimethylamine Salt of Dicamba                                     | 1918009       |       |
| HYDROCARBONS   | 64741737           | Nitrapyrin (Pyridine, 2-chloro-6-trichloro methyl?)               | 1929824       |       |
| Hydroquinone   | 123319             | 2,4 Dichlorophenoxy Acetic Acid                                   | 2008391       |       |
| HYDROTREATED HEAVY NAPHTHA (PETROLEUM)                                 | 64742489           | 2,4-D Dimethylamine salt  | 2008391       |       |
| hydrotreated light distillate  | 64742149           | Diethylamine Salt of 2,4-dichlorophenoxy acetic acid              | 2008391       |       |
| Hydrotreated Light Distillate  | 64742478           | Phenyl Trimethicone   | 2116849       |       |
| HYDROTREATED LIGHT DISTILLATE  | 64742478           | Monosodium Acid Methanearsonate                                   | 2163806       |       |
| Hydrotreated middle distillate   | 64742467           | MSMA  | 2163806       |       |
| hydroxy alkylmethacrylate  | 27813021           | Sodium Alkyl Benzene Sulfonate                                    | 2211985       |       |
| Hydroxyacetic Acid   | 79141              | 1,2,4-Trimethylcyclohexane  | 2234755       |       |
| HYDROXYETHYL METHACRYLATE  | 868779             | Ammonium Lauryl Sulfate   | 2235543       |       |
| Imazaquin  | 81335479           | 1,4 Diglycidyloxybutane   | 2425798       |       |
| Indan  | 496117             | Butanediol diglycidyl ether                                       | 2425798       |       |
| Intrasol FA 12/18/5  | 22047490           | Butyl Glycidyl Ether (Oxirane, butoxymethyl)                      | 2426086       |       |
| Iodine   | 7553562            | tetrahydofuran  | 2455245       |       |
| IPA  | 67630              | Picloram, Potassium salt  | 2545600       |       |
| Isobornyl Acetate  | 125123             | OCTYL DIMETHYL AMINE OXIDE  | 2605789       |       |
| Isobornyl Acetate (Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl,-acetyl) | 125122             | 2-methyl-4-isothiazoline-3-one                                    | 2682204       |       |
| Isobutane  | 75285              | 2-Propoxyethanol  | 2807309       |       |
| Isobutane (A-31)   | 75285              | EKTASOLVE   | 2807309       |       |
| ISOBUTANE/ PROPANE   | 68476857           | Ektasolve EP  | 2807309       |       |
| isobutane/propane  | 68475592           | Ethylene Glycol Monopropyl Ether                                  | 2807309       |       |
| Isobutane/Propane  | 68476868           | Ethylene Glycol-n-propyl Ether                                    | 2807309       |       |
| Isobutanol   | 78831              | Glycol Ether EP   | 2807309       |       |
| ISOBUTYL ACETATE   | 110190             | Propylene Glycol EP Solvent                                       | 2807309       |       |
| Isobutyl Acetone   | 110190             | PROPOXYETHANOL  | 2807309       |       |
| Isobutyl Alcohol   | 78831              | 2-Chloro-1,1,2-tetrafluoroethane (HCFC-124)                       | 2837890       |       |
| Isobutyl Isobutyrate   | 97858              | HCFC-124 (2-Chloro-1,1,2-tetrafluoroethane)                       | 2837890       |       |
| Isobutyl methacrylate  | 97869              | 4-Methyl decane   | 2847725       |       |
| Isobutylcyclohexane  | 1678984            | Isophorone Diamine  | 2855132       |       |
| Isohexadecane  | 15220856           | Chlorpyrifos  | 2921882       |       |
| Isohexane  | 107835             | Dursban   | 2921882       |       |
| Isohexane  | 73513425           | Dursban (Chlorpyrifos)  | 2921882       |       |
| Isomeric Hydrocarbons  | 68551188           | Dursban H.F. Insecticide Concentrate                              | 2921882       |       |
| Isopar C   | 64742489           | Dursban HF  | 2921882       |       |
| Isopar E   | 64742489           | D-Tert Butyl Phenyl Glycidyl Ether                                | 3101608       |       |
| Isopar G   | 64742489           | 12-Hydroxy Octadecanoic Acid                                      | 3159624       |       |
| Isopar H   | 64742489           | 12-HYDROXY-OCTADECANOIC ACID                                      | 3159624       |       |
| Isopar K   | 64742489           | 2,2,4 TMO   | 3236531       |       |
| Isopar L   | 64742489           | 2,2,4 Trimethylhexamethylenediamine                               | 3236531       |       |
| Isopar M   | 64742478           | 2,4,4 trimethylhexamethylenediamine                               | 3236542       |       |
| ISOPARAFFIN HYDROCARBON  | 64741657           | dipropylene glycol ethyl ether                                    | 3459948       |       |
| ISOPARAFFINIC PETROLEUM  | 68551199           | dipropylene glycol methyl ether                                   | 3459948       |       |
| ISOPARAFFINIC SOLVENT  | 64742489           | Piperalin   | 3478942       |       |
| ISOPARRIFINIC PETROLEUM SOLVENT  | 8001603            | Isophorone diisocyanate   | 4098719       |       |
| Isophorone   | 78591              | 1-Methyl-2-propylcyclohexane                                      | 4291796       |       |
| Isophorone Diamine   | 28551132           | PENTAETHYLENE GLYCOL  | 4792158       |       |
| Isophorone diisocyanate  | 4098719            | Methylene bis(4-cyclohexylisocyanate)                             | 5124301       |       |
| Isopropanol  | 67630              | 1-Butoxy-2-propanol   | 5131668       |       |
| Isopropyl Acetate  | 108214             | 2-Propanol-1-Butoxy   | 5131668       |       |
| Isopropyl Alcohol  | 67630              | n-Butoxypropanol  | 5131668       |       |
| Isopropyl Alcohol  | 26080191           | PROPYLENE GLYCOL MONOBUTYL ETHER                                  | 5131668       |       |
| Isopropyl Alcohol, Anhydrous   | 67630              | Ammonium Thioglycolate  | 5421465       |       |
| Isopropyl Isosterate   | 68171335           | Thioglycolate, Ammonium Salt                                      | 5421465       |       |
| ISOPROPYLAMINE   | 75310              | Tetrabutyl Titanate   | 5593704       |       |
| Isopropylcyclohexane   | 696297             | Chlorpyrifos-methyl   | 5598130       |       |
| Kaydol Mineral Oil   | 8012951            | 2-(Tert-butylamino)-4-Chloro-6-Ethylamino-s-triazi                | 5915413       |       |
| KD COCO AMIDE  | 61791319           | 4-Isopropenyl 1-Methylcyclohexane                                 | 5989275       |       |
| kerosene   | 80082061           | Citrus Distillate   | 5989275       |       |
| Kerosene   | 9002059            | Citrus Terpenes   | 5989275       |       |

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|--|--------------------|----------|---|---------|
| Kerosene   |                    | 64742810 | Crude Citrus Limonene   | 5989275 |
| KEROSENE   |                    | 64642478 | D Limonene  | 5989275 |
| Klearol Mineral Oil                                |                    | 8012951  | Orange Terpenes   | 5989275 |
| L.P. Gas Propellant                                |                    | 68476868 | Methylene bis (thiocyanate)                                       | 6317186 |
| Lactic Acid  |                    | 50215    | 2,2,4-Trimethyl-1,3-pentanediol di-isobutyrate (Texanol iso-buty) | 6846500 |
| Lactic AcidEDTA                                    |                    | 50215    | Texanol iso-butyrate  | 6846500 |
| Lactol Spirits                                     |                    | 64741555 | HEXAMETHYLENEDIAMINE  | 6898775 |
| Lead Chromate (C.I. pigment yellow 34)             |                    | 1344372  | Malic Acid (Butanedioic acid, hydroxy?)                           | 6915157 |
| Lemon Oil  |                    | 68916892 | Diisopropyl Adipate (hexanedioic acid, bis (1-methylhexyl))       | 6938949 |
| LIGHT ALIPHATIC NAPHTHA SOLVENT                    |                    | 64742898 | 2-Methyl decane   | 6975980 |
| LIGHT AROMATIC NAPHTHA SOLVENT                     |                    | 64742956 | 2-CYANO-2-PROPENOIC ACID ETHYL ESTER                              | 7085850 |
| Light Distillate                                   |                    | 64742149 | Ethyl-2-cyanoacrylate   | 7085850 |
| Light naphtha                                      |                    | 64742840 | Ethylcyanoacrylate  | 7085850 |
| Light Naphtha                                      |                    | 64742149 | Dieetyl Dimethyl Ammonium Chloride                                | 7173515 |
| light petroleum distillate                         |                    | 64742749 | Iodine  | 7553562 |
| LIGROINE   |                    | 8032324  | 12-Hydroxy Octadecanoic Acid Monolithium Salt                     | 7620771 |
| Lindane (hexachlorocyclohexane)                    |                    | 58899    | Sodium Molybdate  | 7631950 |
| LINEAR ALCOHOL ETHOXYLATE                          |                    | 69013189 | ETHYL 3ETHOXYPROPIONATE   | 7636699 |
| LINSEED OIL  |                    | 68001261 | D'LIMONENE  | 7705148 |
| Liquid Petroleum Propellant                        |                    | 68476889 | PETROLEUM   | 8000209 |
| Liquified Petroleum Gas                            |                    | 68476857 | Oil Lavender  | 8000280 |
| LPA Petroleum Distillate                           |                    | 68551188 | Clove Oil   | 8000348 |
| Lubricating Oil                                    |                    | 64642525 | Terpineol   | 8000417 |
| M-cresol   |                    | 108394   | Terpinol  | 8000417 |
| m-pyrol  |                    | 872504   | Eucalptus   | 8000484 |
| M-Pyrol (methyl pyrrolidine)                       |                    | 120945   | Boiled Linseed Oil  | 8001261 |
| Malathion  |                    | 121755   | Cottonseed Oil (Gossypium Hirsutum)                               | 8001294 |
| Malathion TE                                       |                    | 121755   | Benzalkonium Chloride   | 8001545 |
| Malathion - Technical                              |                    | 121755   | BTC-8358 Stephan Company  | 8001545 |
| Malic Acid (Butanedioic acid, hydroxy?)            |                    | 6915157  | N-Alkyl Dimethyl Benzyl Ammonium Chloride                         | 8001545 |
| Manalox Resin                                      |                    | 13419153 | Quaternary Ammonium Chloride                                      | 8001545 |
| Medium Aliphatic Solvent Naphtha                   |                    | 64742887 | ISOPARRIFINIC PETROLEUM SOLVENT                                   | 8001603 |
| MEK  |                    | 78933    | CASTOR OIL  | 8001794 |
| Menthol  |                    | 89781    | Pale Oil  | 8002059 |
| Menthol  |                    | 15356704 | Petroleum Distillate, Naphtha                                     | 8002059 |
| MESITYL OXIDE (3-penten-2-one, 4-methyl?)          |                    | 141797   | Pine Oil  | 8002093 |
| Meta Cresol 36/38                                  |                    | 108394   | Terpene Hydrocarbons  | 8002093 |
| Methacrylic Acid                                   |                    | 31346573 | Tall Oil  | 8002264 |
| Methacrylic Acid (2-methyl, 2-propenoic acid)      |                    | 79414    | Paraffin Wax  | 8002742 |
| Methane  |                    | 74828    | Pyrenone CSE-10   | 8003347 |
| Methanoic acid                                     |                    | 64186    | Pyrethrins  | 8003347 |
| Methanol   |                    | 49120    | Pyrethrum (PD-5 Residual)   | 8003347 |
| Methanol   |                    | 67561    | Gum Turpentine  | 8006642 |
| Methanol Alcohol                                   |                    | 67561    | Steam Distilled Wood Turpentine                                   | 8006642 |
| METHOXY PROPANOL ACETATE                           |                    | 108656   | Turpentine  | 8006642 |
| Methoxychlor                                       |                    | 72435    | Aliphatic petroleum distillates                                   | 8008206 |
| Methoxymethyl Ethoxypyranol                        |                    | 34590948 | Deodorized Kerosene   | 8008206 |
| Methoxypyranol                                     |                    | 107982   | Camphor Oil   | 8008513 |
| Methyl Alcohol                                     |                    | 67561    | Camphor yellow  | 8008513 |
| Methyl amyl alcohol                                |                    | 108112   | Oil Camphor   | 8008513 |
| Methyl Amyl Ketone                                 |                    | 110430   | Orange Oil  | 8008579 |
| METHYL BENZENE                                     |                    | 108883   | Spruce oil  | 8008808 |
| Methyl Benzoate                                    |                    | 93583    | Petrolatum  | 8009038 |
| Methyl Bis Hydroxyethyl Ammonium Methylsulfate     |                    | 68410695 | Oil of Pine Tar   | 8011481 |
| METHYL CARBITOL                                    |                    | 111773   | Kaydol Mineral Oil  | 8012951 |
| Methyl Cellosolve                                  |                    | 109864   | Klearol Mineral Oil   | 8012951 |
| Methyl Cellosolve Acetate (EGMEA)                  |                    | 110496   | Paraffin Oil  | 8012951 |
| Methyl chloroform (1,1,1-Trichloroethane)          |                    | 71556    | Epoxidized Soybean Oil  | 8013078 |
| METHYL CYANOACRYLATE                               |                    | 137053   | ETHANOL (METHANOL DENATURED)                                      | 8013523 |
| Methyl Dihydroxyethylisotridecyloxypropyl Ammonium |                    | 68610195 | Oil Pettigrain  | 8014173 |
| METHYL ETHER                                       |                    | 115106   | Oil Spike   | 8016782 |
| Methyl Ethyl Ketone                                |                    | 78933    | Spike (Lavender Oil, Spanish)                                     | 8016782 |
| Methyl Isoamyl Ketone                              |                    | 110123   | Mineral Oil   | 8020835 |
| Methyl Isobutyl Ketone                             |                    | 108101   | Ethanol   | 8024451 |
| Methyl isopropyl ketone                            |                    | 563804   | Ethanol (39C SDA)   | 8024451 |
| Methyl methacrylate                                |                    | 80626    | Ethanol SDA 39C   | 8024451 |
| Methyl n-amyl Ketone                               |                    | 110430   | Saponified Vegetable Oil (Green Soap)                             | 8026708 |

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| Chemical Name                                      | Alphabetical Order | CAS #    | By CAS Number                                    | CAS #     |
|--|--------------------|----------|--|-----------|
| METHYL N-PROPYL KETONE                             |                    | 107879   | NAPHTHA  | 8030306   |
| METHYL NAPHTHALENE                                 |                    | 65996794 | Base Oil   | 8030309   |
| Methyl Nonyl Ketone                                |                    | 112129   | Tallowammonium Trimethyl Chloride                | 8030782   |
| Methyl propyl ketone (2-Pentanone)                 |                    | 107879   | LIGROINE   | 8032324   |
| METHYL SALICYLATE                                  |                    | 119368   | Petroleum Ether                                  | 8032324   |
| Methyl Tertiary Butyl Ether                        |                    | 1634044  | VM & P NAPHTHA                                   | 8032324   |
| METHYLAL, DIMETHOXYMETHANE                         |                    | 109875   | Mineral White Oil (Slab Oil)                     | 8042475   |
| Methylcyclohexane                                  |                    | 108872   | White Oil No. 9T                                 | 8042475   |
| Methylcyclopentadienyl Manganese Tricarbonyl       |                    | 12108133 | Turpentine Oil Resin                             | 8052140   |
| Methylene Bis (4-Cyclohexylisocyanate)             |                    | 512431   | Aliphatic Hydrocarbon (Stoddard Type)            | 8052413   |
| Methylene bis (thiocyanate)                        |                    | 6317186  | Stoddard Solvent                                 | 8052413   |
| Methylene bis(4-cyclohexylisocyanate)              |                    | 5124301  | Asphalt  | 8052424   |
| Methylene Chloride                                 |                    | 75092    | Damar gum  | 9000162   |
| Methylene chloride (Dichloromethane)               |                    | 75092    | Kerosene   | 9002059   |
| MIBK   |                    | 108101   | Polytetra fluoroethylene                         | 9002840   |
| MIDDLE DISTILLATE PETROLEUM SOLVENT EXTRACT        |                    | 64742069 | Polyethylene                                     | 9002884   |
| Mineral Oil  |                    | 8020835  | Octylphenyl Ethylene Oxide                       | 9002931   |
| Mineral Oil  |                    | 64741964 | Polybutene                                       | 9003296   |
| Mineral Oil  |                    | 64742650 | Nitrocellulose                                   | 9004700   |
| MINERAL OIL  |                    | 64742525 | Sodium Laureth Ether Sulfate                     | 9004824   |
| Mineral Seal Oil                                   |                    | 64741442 | Sodium Laureth Sulfate                           | 9004824   |
| Mineral Seal Oil                                   |                    | 64742309 | Sodium Laureth-12 Sulfate                        | 9004824   |
| Mineral Seal Oil                                   |                    | 64742467 | Sodium Lauryl Ether Sulfate                      | 9004824   |
| Mineral Seal Oil                                   |                    | 64742809 | Polyethylene Glycol Dilaurate                    | 9005021   |
| MINERAL SEAL OIL                                   |                    | 64741657 | POLYETHYLENE GLYCOL DILAURATE                    | 9005021   |
| mineral spirits                                    |                    | 80524137 | GUM TURPENTINE                                   | 9005907   |
| Mineral spirits                                    |                    | 62742887 | Turpentine                                       | 9005907   |
| Mineral spirits                                    |                    | 68513031 | Polymethyl methacrylate                          | 9011147   |
| Mineral Spirits                                    |                    | 64475850 | Alkylphenol Ethanol                              | 9016459   |
| Mineral Spirits                                    |                    | 64741324 | Alkylphenol Ethoxylate                           | 9016459   |
| Mineral Spirits                                    |                    | 64741442 | Nonylphenol Polyethoxylate                       | 9016459   |
| Mineral Spirits                                    |                    | 64741657 | Octylphenol Ether                                | 9036195   |
| Mineral Spirits                                    |                    | 64742428 | Polyoxyethylene Oxytol Phenyl Ether              | 9036195   |
| Mineral Spirits                                    |                    | 64742488 | CIS 1,3-Dichloropropene                          | 10061015  |
| Mineral Spirits                                    |                    | 64742897 | Trans 1,3-Dichloropropene                        | 10061026  |
| Mineral Spirits                                    |                    | 64748478 | Triethanolamine Lauryl Sulfate                   | 11178771  |
| Mineral Spirits                                    |                    | 64761419 | Gamma-Aminopropy/ Triethoxysilane                | 111919302 |
| Mineral Spirits                                    |                    | 80542413 | Zinc Napthenate                                  | 12001853  |
| MIneral Spirits                                    |                    | 64742442 | DIPROPYLENE GLYCOL METHYL ETHER                  | 12002254  |
| MINERAL SPIRITS                                    |                    | 64642887 | Methylcyclopentadienyl Manganese Tricarbonyl     | 12108133  |
| Mineral White Oil (Slab Oil)                       |                    | 8042475  | Molybdate Orange                                 | 12656858  |
| Modified Polyethoxylated Alcohol                   |                    | 70321561 | 3-Methyl decane                                  | 13151343  |
| MODIFIED POLYETHOXYLATED ALCOHOL                   |                    | 70321561 | 5-Methyl decane                                  | 13151354  |
| Molybdate Orange                                   |                    | 12656858 | AROMATIC SOLVENT                                 | 13330207  |
| mono-Chlorotoluene                                 |                    | 25168052 | Manalox Resin                                    | 13419153  |
| Monochlorobenzene                                  |                    | 108907   | PPG-2 Methyl Ether                               | 13429077  |
| Monochlorotoluene                                  |                    | 25168052 | Dipropylene glycol monomethyl ether              | 13459948  |
| Monosodium Acid Methaneearsonate                   |                    | 2163806  | Tri (beta-chloropropyl) phosphate                | 13674845  |
| Morpholine   |                    | 68855547 | Ferbam   | 14484641  |
| MORPHOLINE   |                    | 110918   | Isohexadecane                                    | 15220856  |
| MSMA   |                    | 2163806  | Menthol  | 15356704  |
| N, N-dimethylformamide                             |                    | 68122    | Ethanolamine Sulfite                             | 15535292  |
| N,N-Diethyl-M-Toluamide                            |                    | 134623   | 4-Methyl nonane                                  | 17301949  |
| N,N-DIMETHYL-P-TOLUIDINE                           |                    | 99978    | 2,6-Dimethylnonane                               | 17302282  |
| n- Butoxypropanol                                  |                    | 5131668  | Benomyl  | 17804352  |
| N-(1-Ethylpropyl -3,4-Dimethyl 2,6-Dinitrobenzenam |                    | 40487421 | 2-ETHYL OXY-BIS-HEXANOIC ACID                    | 18268707  |
| N-Alkyl Dimethyl Benzyl Ammonium Chloride          |                    | 8001545  | Tetrachloroisophtianitrile                       | 18947456  |
| N-Alkyl Dimethyl Benzyl Ammonium Chloride          |                    | 68424851 | 2-propanol, 1-[2-(methoxy-1-methylethoxy)-1-m... | 20324338  |
| N-amyl acetate                                     |                    | 628637   | Tripropylene Glycol Methyl Ether                 | 20324338  |
| N-BUTANE   |                    | 106978   | 1,4-bis-bromoacetoxy-2-butene                    | 20679587  |
| n-butanol  |                    | 71363    | Camphor  | 21368683  |
| n-Butyl Acetate                                    |                    | 123864   | Intrasol FA 12/18/5                              | 22047490  |
| n-Butyl Alcohol                                    |                    | 71363    | Wickenol   | 22047490  |
| N-BUTYL ETHER OF ETHYLENE GLYCOL                   |                    | 111762   | 1,1,2,3,3-Pentafluoropropane (HFC-245ea)         | 24270664  |
| N-Butyl Propionate                                 |                    | 590012   | HFC-245ea (1,1,2,3,3-Pentafluoropropane)         | 24270664  |
| n-Heptane  |                    | 142825   | Potassium Sorbate                                | 24634615  |
| n-hexane   |                    | 110543   | 1,1,3,3-Tetramethylcyclohexane                   | 24770647  |

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|---|--------------------|--|---------------|-------|
| N-Methyl -2- Pyrrolidone                            | 872504             | Ethylene/vinyl acetate polymer                     | 24937788      |       |
| N-Methylpyrrolidone                                 | 872504             | Unsaturated Polyester Resin                        | 25037665      |       |
| N-Methypyrrolidone                                  | 120945             | PVP/VA Copolymer                                   | 25086899      |       |
| N-OCTANE  | 111659             | Ethyl Ester of PVM/MA Copolymer (w/ethanol)        | 25087063      |       |
| N-pentane   | 109660             | Gantrez ES225                                      | 25087063      |       |
| N-Phosphonomethylglycine                            | 1071836            | DIMETHYL PHENOL PHOSPHATE                          | 25155231      |       |
| n-Propanol  | 71238              | Dodecybenzenesulfonate                             | 25155300      |       |
| n-Propoxypropanol                                   | 1569013            | Sodium Dodecybenzene Sulfonate                     | 25155300      |       |
| n-Propyl acetate                                    | 109604             | 1,1-dichloro-1-fluoroethane (HCFC-141b)            | 25167888      |       |
| N-Propyl Alcohol                                    | 71238              | HCFC-141b (1,1-Dichloro-1-fluoroethane)            | 25167888      |       |
| n-Propylbenzene                                     | 103651             | Halso AG125 Monochlorotoluene                      | 25168052      |       |
| N-vinyl-2-pyrrolidone                               | 88120              | mono-Chlorotoluene                                 | 25168052      |       |
| NABAM (Disodium Ethylene Bis Dithiocar-             | 142596             | Monochlorotoluene                                  | 25168052      |       |
| NAPHTHA   | 8030306            | Dipropylene glycol                                 | 25265718      |       |
| Naphtha Heavy Alkylate                              | 64741657           | Dipropylene glycol                                 | 25265718      |       |
| Naphtha Light Aliphatic                             | 64742898           | 2,2,4-TRIMETHYL -1,3-MONOISOBUTYRATE               | 25265774      |       |
| Naphtha, Heavy Aromatic                             | 64742069           | 2,2,4-Trimethyl-1,3-pentanediol-iso-butyrate       | 25265774      |       |
| NAPHTHA, STRAIGHT RUN, HEAVY                        | 64741419           | Texanol  | 25265774      |       |
| Naphthalene   | 91203              | ORTHODICHLOROBENZENE                               | 25321226      |       |
| Naphthenic Acid Lead Salt                           | 61790145           | Polyethylene Glycol                                | 25322683      |       |
| Naphthol Spirits                                    | 64792489           | Polyglycol P-2000                                  | 25322694      |       |
| Naptherie Distillate                                | 64742525           | Propylene Glycol                                   | 25322694      |       |
| Neopentyl glycol (2,2-Dimethyl-1,3-Propanediol)     | 126307             | C12 Alpha Olefin                                   | 25378227      |       |
| Neutral Base Oil                                    | 64741895           | TRIPROPYLENE GLYCOL                                | 25498491      |       |
| Niacinamide (3-pyridine carboxamide)                | 98920              | Tripropylene Glycol Methyl Ether                   | 25498491      |       |
| Nitrapyrin (Pyridine, 2-chloro-6-trichloro methyl?) | 1929824            | Trimethylhexamethylenediamine                      | 25513648      |       |
| Nitrocellulose                                      | 9004700            | Ethyltoluenes                                      | 25550145      |       |
| NITROETHANE   | 79243              | Aromatic 150                                       | 25551137      |       |
| Nitroglycerin (1,2,3-propanetriol, trinitrate)      | 55630              | Tenneco 500/100                                    | 25551137      |       |
| NITROMETHANE  | 75525              | Trimethyl Benzene                                  | 25551137      |       |
| Nonane  | 111842             | Polyglycol Dimethacrylate                          | 25852475      |       |
| NONY PHENOL ETHYLENE OXIDE 6 MOLE                   | 68412544           | Isopropyl Alcohol                                  | 26080191      |       |
| Nonyl Phenyl Ethylene Oxide 6M                      | 68412544           | 5-chloro-2-methyl-4-isothiazoline-3-one            | 26172554      |       |
| Nonylphenol Polyethoxylate                          | 9016459            | Sodium Tridecylbenzene Sulfonate                   | 26248248      |       |
| Normal Butyl Alcohol                                | 71363              | Alkyaryl Sulfonate                                 | 26264051      |       |
| Norpar 15   | 64771728           | Alkyaryl Sulfonate Isopropylamine Salt             | 26264051      |       |
| O, O-dimethyl-O-phosphorothiate                     | 333476             | o-cresyl glycidyl ether                            | 26447143      |       |
| O- Dichlorobenzene                                  | 95501              | Dodecyl Benzene Sulfonic Acid                      | 27176870      |       |
| o-benzyl-p-chlorophenol                             | 120321             | Dodecylbenzene Sulfonate                           | 27176870      |       |
| O-CHLOROTOLUENE                                     | 95498              | 2-Ethylhexyl Nitrate                               | 27248967      |       |
| o-cresyl glycidyl ether                             | 26447143           | 2-METHYL-2-PROPOENOIC ACID MONOESTER               | 27813021      |       |
| O-Nitrotoluene                                      | 88722              | hydroxy alkylmethacrylate                          | 27813021      |       |
| Octane  | 111659             | Epoxy Resin  | 28064144      |       |
| Octanol   | 111875             | Thiobencarb  | 28249776      |       |
| OCTYL DIMETHYL AMINE OXIDE                          | 2605789            | Paraformaldehyde                                   | 30525894      |       |
| Octyl Epoxy Tallate                                 | 61788725           | Glyceryl Thioglycolate                             | 30618849      |       |
| Octylphenol Ether                                   | 9036195            | Quaternary Ammonium Chloride                       | 31075248      |       |
| Octylphenyl Ethylene Oxide                          | 9002931            | Methacrylic Acid                                   | 31346573      |       |
| Odorless Mineral Spirits                            | 61741657           | Glycereth-7  | 31694550      |       |
| Odorless Mineral Spirits                            | 64741418           | Glycereth-7  | 31694550      |       |
| Odorless Mineral Spirits                            | 64742657           | (MCPP) Dimethylamine salt                          | 32351705      |       |
| ODORLESS MINERAL SPIRITS                            | 64475850           | Propionic Acid                                     | 32351705      |       |
| ODORLESS MINERAL SPIRITS                            | 64742488           | 2-Methoxymethylethoxy Propanol                     | 34590948      |       |
| Odorless Mineral Spirts                             | 64741657           | Dipropylene Gycol Methyl Ether                     | 34590948      |       |
| ODORLESS MINERAL SPIRITS                            | 64742150           | DOWANOL DPM  | 34590948      |       |
| Oil Camphor   | 8008513            | Glycol Ether DPM                                   | 34590948      |       |
| Oil Lavender  | 8000280            | Methoxymethyl Ethoxypropanol                       | 34590948      |       |
| Oil of Pine Tar                                     | 8011481            | Propanol, 1 (or 2)-2-methoxymethylethoxy)-         | 34590948      |       |
| Oil Pettigrain                                      | 8014173            | URETHANE DIMETHACRYLATE                            | 39318699      |       |
| Oil Spike   | 8016782            | Disodium Laureth Sulfosuccinate                    | 39354455      |       |
| Oleic Acid (9-octadecenoic acid)                    | 112801             | 3-4 Dimethyl- 2,6 Dinitrobenzenamine               | 40487421      |       |
| Oleyl Alcohol                                       | 143282             | N-(1-Ethylpropyl -3,4-Dimethyl 2,6-Dinitrobenzenam | 40487421      |       |
| Orange Oil  | 8008579            | Acetamide, N, N'-(ethenylmethyl-silylene)Bis-N-Me  | 50791872      |       |
| Orange Oil  | 68606940           | Permethrin (80 % concentrate)                      | 52645531      |       |
| Orange Oil Terpenes                                 | 68647723           | Propionic Acid                                     | 53404312      |       |
| Orange Oil Terpenes                                 | 68917577           | Solvent Naphtha T500-100                           | 54742956      |       |
| Orange Terpene                                      | 68647723           | Ethafluralin                                       | 55283686      |       |

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|--|--------------------|----------|---|----------|
| Orange Terpenes                            |                    | 5989275  | 3-METHYLMETHOXYBUTANOL                      | 56539663 |
| Orchex 796                                 |                    | 72623848 | ButoxyPropanol                              | 57018527 |
| ORTHO DICHLOROBENZENE                      |                    | 95501    | Propylene glycol T-Butyl Ether              | 57018527 |
| ortho-phenylphenol                         |                    | 90437    | Propylene glycol tertiary butyl ether       | 57018527 |
| ORTHODICHLOROBENZENE                       |                    | 25321226 | Clopyralid Monoethanolamine salt            | 57754855 |
| Oxo-Heptyl Acetate                         |                    | 90438792 | D-LIMONENE                                  | 58917577 |
| p-dichlorobenzene                          |                    | 106467   | 1-METHYL - 4 -(1-METHYLETHENYL) CYCLOHEXENE | 59892725 |
| p-Menthadiene                              |                    | 68956569 | Odorless Mineral Spirits                    | 61741657 |
| P-Menthadienes                             |                    | 68956569 | Petroleum Hydrocarbon Mix                   | 61742945 |
| Pale Oil                                   |                    | 8002059  | Octyl Epoxy Tallate                         | 61788725 |
| Pale Oil                                   |                    | 68476302 | Carsamide CA                                | 61789193 |
| Panasol AN2K                               |                    | 63798787 | Betaine                                     | 61789400 |
| Para-dichlorobenzene                       |                    | 106467   | Cocamidopropyl Amino Betane                 | 61789400 |
| Parachlorobenzotrifluoride (PCBTF)         |                    | 98566    | Alkali Surfactant                           | 61790123 |
| Parachlorometoxylenol                      |                    | 88040    | Naphthenic Acid Lead Salt                   | 61790145 |
| Paraffin Oil                               |                    | 8012951  | Barrium Sulfinate                           | 61790485 |
| Paraffin Wax                               |                    | 8002742  | Armak 1194                                  | 61791262 |
| Paraffinic Distillate                      |                    | 64742650 | KD COCO AMIDE                               | 61791319 |
| PARAFFINIC PETROLEUM SOLVENT               |                    | 64741895 | Sodium Cocoyl Sarcosinate                   | 61791591 |
| Parafin series of hydrocarbon solvents     |                    | 68466868 | Mineral spirits                             | 62742887 |
| Paraformaldehyde                           |                    | 30525894 | DIMETHYL SILOXANE                           | 63148629 |
| PCBTF (Parachlorobenzotrifluoride)         |                    | 98566    | Polydimethylsiloxane                        | 63148629 |
| Pentachloronitrobenzene                    |                    | 826886   | Panasol AN2K                                | 63798787 |
| PENTAETHYLENE GLYCOL                       |                    | 4792158  | Dimethicone Copotyol                        | 64365237 |
| Pentafluoroethane (HFC-125)                |                    | 354336   | Mineral Spirits                             | 64475850 |
| Pentane                                    |                    | 109660   | ODORLESS MINERAL SPIRITS                    | 64475850 |
| PERACETIC ACID                             |                    | 79210    | KEROSENE                                    | 64642478 |
| Perchloroethylene                          |                    | 127184   | Lubricating Oil                             | 64642525 |
| Permethrin (80 % concentrate)              |                    | 52645531 | MINERAL SPIRITS                             | 64642887 |
| Petrolatum                                 |                    | 8009038  | Mineral Spirits                             | 64741324 |
| PETROLEUM                                  |                    | 8000209  | Odorless Mineral Spirits                    | 64741418 |
| petroleum distillate                       |                    | 68477316 | NAPHTHA, STRAIGHT RUN, HEAVY                | 64741419 |
| Petroleum Distillate                       |                    | 64741442 | Aliphatic Petroleum Hydrocarbon             | 64741442 |
| Petroleum Distillate                       |                    | 64741657 | Mineral Seal Oil                            | 64741442 |
| Petroleum Distillate                       |                    | 64741862 | Mineral Spirits                             | 64741442 |
| Petroleum Distillate                       |                    | 64741908 | Petroleum Distillate                        | 64741442 |
| Petroleum Distillate                       |                    | 64742376 | STRAIGHT RUN MIDDLE PETROLEUM               | 64741442 |
| Petroleum Distillate                       |                    | 68476302 | Petroleum Distillates                       | 64741478 |
| Petroleum Distillate                       |                    | 68551155 | Lactol Spirits                              | 64741555 |
| PETROLEUM DISTILLATE                       |                    | 64741771 | ALIPHATIC HYDROCARBON                       | 64741657 |
| PETROLEUM DISTILLATE                       |                    | 64741964 | Aliphatic petroleum distillates             | 64741657 |
| Petroleum Distillate (Deodorized Kerosene) |                    | 64742149 | Alkylation Naphtha, heavy                   | 64741657 |
| Petroleum Distillate, Naphtha              |                    | 8002059  | C10-C11 PARAFFINS CYCLO-PARAFFINS           | 64741657 |
| Petroleum distillates                      |                    | 64742894 | C9-C12 Saturated Hydrocarbons               | 64741657 |
| Petroleum distillates                      |                    | 64842898 | Heavy Alkylate Naphtha                      | 64741657 |
| Petroleum distillates                      |                    | 67472945 | ISOPARAFFIN HYDROCARBON                     | 64741657 |
| Petroleum Distillates                      |                    | 64741478 | MINERAL SEAL OIL                            | 64741657 |
| Petroleum Distillates                      |                    | 64742309 | Mineral Spirits                             | 64741657 |
| PETROLEUM DISTILLATES                      |                    | 64741975 | Naphtha Heavy Alkylate                      | 64741657 |
| PETROLEUM DISTILLATES                      |                    | 64742964 | Odorless Mineral Spirits                    | 64741657 |
| Petroleum Ether                            |                    | 8032324  | Petroleum Distillate                        | 64741657 |
| Petroleum hydrocarbon                      |                    | 64742467 | Petroleum Solvent                           | 64741657 |
| Petroleum Hydrocarbon Distillate           |                    | 64741964 | SOL-71                                      | 64741657 |
| Petroleum Hydrocarbon Mix                  |                    | 61742945 | Soltrol 145                                 | 64741657 |
| PETROLEUM HYDROCARBON NAPHTHA              |                    | 64741920 | Aromatic Hydrocarbon Solvent                | 64741680 |
| PETROLEUM HYDROCARBON OIL                  |                    | 64742525 | ALIPHATIC DISTILLATE                        | 64741737 |
| Petroleum Middle Distillate                |                    | 68476346 | HYDROCARBONS                                | 64741737 |
| Petroleum Oil                              |                    | 64741895 | PETROLEUM DISTILLATE                        | 64741771 |
| Petroleum Oil                              |                    | 64742650 | SOLVENT REFINED LIGHT NAPHTHA               | 64741840 |
| PETROLEUM OIL                              |                    | 64742467 | Textile spirits                             | 64741840 |
| Petroleum Process Oil                      |                    | 64742558 | Petroleum Distillate                        | 64741862 |
| Petroleum Resin                            |                    | 64742161 | Sun Ag Oil 7N                               | 64741884 |
| Petroleum solvent                          |                    | 64771728 | Sunpar 110                                  | 64741884 |
| Petroleum Solvent                          |                    | 64741657 | Distillates (Petroleum), Solvent-Rf Lt.Nap  | 64741895 |
| Phenol                                     |                    | 108952   | Neutral Base Oil                            | 64741895 |
| PHENOL (90%)                               |                    | 108952   | PARAFFINIC PETROLEUM SOLVENT                | 64741895 |
| Phenol Isopropylated, Phosphate            |                    | 68937417 | Petroleum Oil                               | 64741895 |

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| Chemical Name                               | Alphabetical Order | CAS #    | By CAS Number                               | CAS #    |
|---|--------------------|----------|---|----------|
| Phenoxyethanol                              |                    | 122996   | Sun Spray 6N                                | 64741895 |
| Phenyl Trimethicone                         |                    | 2116849  | Petroleum Distillate                        | 64741908 |
| Phenylglycol ether                          |                    | 122996   | PETROLEUM HYDROCARBON NAPHTHA               | 64741920 |
| Picloram, Potassium salt                    |                    | 2545600  | Mineral Oil                                 | 64741964 |
| pine oil                                    |                    | 98555    | PETROLEUM DISTILLATE                        | 64741964 |
| Pine Oil                                    |                    | 8002093  | Petroleum Hydrocarbon Distillate            | 64741964 |
| Piperalin                                   |                    | 3478942  | PETROLEUM DISTILLATES                       | 64741975 |
| Piperonyl Butoxide                          |                    | 51036    | SOLVENT REFINED LIGHT NAPHTHENIC DISTILLATE | 64741975 |
| Piperonyl Butoxide, Technical               |                    | 51036    | Aromatic Petroleum Distillate               | 64741986 |
| PM Acetate                                  |                    | 108656   | Han Solvent                                 | 64742069 |
| PM Acetate                                  |                    | 84540578 | HAN-857                                     | 64742069 |
| Poly Solv DB                                |                    | 112345   | MIDDLE DISTILLATE PETROLEUM SOLVENT EXTRACT | 64742069 |
| Poly Solv DE                                |                    | 111900   | Naphtha, Heavy Aromatic                     | 64742069 |
| Poly Solv EB                                |                    | 111762   | 2251 Oil (or 2263 Oil @ 64742-47-8)         | 64742149 |
| Polybutene                                  |                    | 9003296  | hydrotreated light distillate               | 64742149 |
| Polydimethylsiloxane                        |                    | 63148629 | Light Distillate                            | 64742149 |
| Polyethylene                                |                    | 9002884  | Light Naphtha                               | 64742149 |
| Polyethylene Glycol                         |                    | 25322683 | Petroleum Distillate (Deodorized Kerosene)  | 64742149 |
| Polyethylene Glycol Dilaurate               |                    | 9005021  | ODORLESS MINERAL SPIRITS                    | 64742150 |
| POLYETHYLENE GLYCOL DILAURATE               |                    | 9005021  | Petroleum Resin                             | 64742161 |
| Polyglycol 26-3                             |                    | 69029396 | Mineral Seal Oil                            | 64742309 |
| Polyglycol 26-3                             |                    | 69029396 | Petroleum Distillates                       | 64742309 |
| Polyglycol Dimethacrylate                   |                    | 25852475 | SUN GOLDEN OIL #91 (SUN OIL CO.)            | 64742343 |
| Polyglycol P-2000                           |                    | 25322694 | Petroleum Distillate                        | 64742376 |
| Polyisobutylene Solution                    |                    | 64742400 | Polyisobutylene Solution                    | 64742400 |
| Polymethyl methacrylate                     |                    | 9011147  | Mineral Spirits                             | 64742428 |
| Polyoxyethylene Oxtyl Phenyl Ether          |                    | 9036195  | Diesel Fuel #2                              | 64742442 |
| Polysolve DM                                |                    | 111773   | Mineral Spirits                             | 64742442 |
| Polytetra fluoroethylene                    |                    | 9002840  | Hydrotreated middle distillate              | 64742467 |
| Potassium dimethylidithiocarbamate          |                    | 128030   | Mineral Seal Oil                            | 64742467 |
| Potassium Sorbate                           |                    | 24634615 | Petroleum hydrocarbon                       | 64742467 |
| PPG-2 Methyl Ether                          |                    | 13429077 | PETROLEUM OIL                               | 64742467 |
| Primary Amyl Acetate                        |                    | 628637   | C10-15 Saturated Hydrocarbon                | 64742478 |
| Process Oil                                 |                    | 64742525 | Hydrotreated Light Distillate               | 64742478 |
| Prometon                                    |                    | 1610180  | HYDROTREATED LIGHT DISTILLATE               | 64742478 |
| Prometon - Technical                        |                    | 1610180  | Isopar M                                    | 64742478 |
| Propane                                     |                    | 74986    | Mineral Spirits                             | 64742488 |
| PROPANE/BUTANE/ISOBUTANE                    |                    | 68476857 | ODORLESS MINERAL SPIRITS                    | 64742488 |
| Propanoic Acid, 3-Ethoxy-Ethyl Ester        |                    | 763699   | C11-13 ISOPARAFFIN                          | 64742489 |
| Propanol, 1 (or 2) -2-methoxymethylethoxy)- |                    | 34590948 | HYDROTREATED HEAVY NAPHTHA (PETROLEUM)      | 64742489 |
| Propanone                                   |                    | 67641    | Isopar C                                    | 64742489 |
| PROPELLANT A-108 - PROPANE                  |                    | 74986    | Isopar E                                    | 64742489 |
| Propionic Acid                              |                    | 32351705 | Isopar G                                    | 64742489 |
| Propionic Acid                              |                    | 53404312 | Isopar H                                    | 64742489 |
| Propylene Glycol EP Solvent                 |                    | 2807309  | Isopar K                                    | 64742489 |
| PROPOXYETHANOL                              |                    | 2807309  | Isopar L                                    | 64742489 |
| PROPYL ACETATE                              |                    | 109604   | ISOPARAFFINIC SOLVENT                       | 64742489 |
| Propyl Alcohol                              |                    | 71238    | MINERAL OIL                                 | 64742525 |
| Propylbenzene                               |                    | 103651   | Naptherie Distillate                        | 64742525 |
| Propylcyclohexane                           |                    | 1678928  | PETROLEUM HYDROCARBON OIL                   | 64742525 |
| Propylene Glycol                            |                    | 57556    | Process Oil                                 | 64742525 |
| Propylene Glycol                            |                    | 25322694 | Corvus Oil 00519-13                         | 64742558 |
| PROPYLENE GLYCOL METHYL ETHER               |                    | 107556   | Petroleum Process Oil                       | 64742558 |
| PROPYLENE GLYCOL METHYL ETHER               |                    | 107982   | Mineral Oil                                 | 64742650 |
| PROPYLENE GLYCOL MONOBUTYL ETHER            |                    | 5131668  | Paraffinic Distillate                       | 64742650 |
| Propylene Glycol Monomethyl Ether           |                    | 107982   | Petroleum Oil                               | 64742650 |
| Propylene Glycol Monomethyl Ether Acetate   |                    | 108656   | Heavy Alkylate Naphtha                      | 64742657 |
| Propylene glycol T-Butyl Ether              |                    | 57018527 | Odorless Mineral Spirits                    | 64742657 |
| Propylene glycol tertiary butyl ether       |                    | 57018527 | light petroleum distillate                  | 64742749 |
| Propylene Glycol Methyl Ether Acetate       |                    | 108656   | Mineral Seal Oil                            | 64742809 |
| PVP/VA Copolymer                            |                    | 25086899 | Safety Solvent                              | 64742809 |
| Pyrenone CSE-10                             |                    | 8003347  | Safety Solvent 200                          | 64742809 |
| Pyrethrins                                  |                    | 8003347  | Kerosene                                    | 64742810 |
| Pyrethrum (PD-5 Residual)                   |                    | 8003347  | Light naphtha                               | 64742840 |
| Pyrocide Intermediate 5192 (Pyrethrin)      |                    | 121211   | Aliphatic Petroleum Distillate              | 64742887 |
| Quaternary Blend (w/20% ethanol)            |                    | 67784774 | Medium Aliphatic Solvent Naphtha            | 64742887 |
| Quaternary Ammonium Chloride                |                    | 8001545  | Petroleum distillates                       | 64742894 |

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|--|--------------------|--|---------------|-------|
| Quaternary Ammonium Chloride                   | 31075248           | V.M.& P. Naphtha                               | 64742896      |       |
| Refined Petroleum Distillate                   | 92045379           | Mineral Spirits                                | 64742897      |       |
| RESIN A-BENZYL                                 | 100516             | LIGHT ALIPHATIC NAPHTHA SOLVENT                | 64742898      |       |
| S&S, Di-Me,Hydroxy-Terminated UVCB             | 70131678           | Naphtha Light Aliphatic                        | 64742898      |       |
| S-O,O-Diisopropyl phosphorodithioate           | 741582             | ALIPHATIC HYDROCARBON                          | 64742899      |       |
| Safety Solvent                                 | 64742809           | SOLVENT NAPHTHA (PETROLEUM), LIGHT ALIPHATIC   | 64742899      |       |
| Safety Solvent 200                             | 64742809           | VM & P Naphtha                                 | 64742899      |       |
| SAFROLE #                                      | 94597              | Aromatic Petroleum Distillates                 | 64742907      |       |
| Saponified Vegetable Oil (Green Soap)          | 8026708            | Heavy Aromatic Naphtha Solvent                 | 64742945      |       |
| SD 40 Alcohol                                  | 97702180           | Xylene-range aromatic solvent                  | 64742954      |       |
| SD Alcohol 38                                  | 64175              | LIGHT AROMATIC NAPHTHA SOLVENT                 | 64742956      |       |
| SD Alcohol 40                                  | 64175              | Aliphatic Hydrocarbon                          | 64742963      |       |
| SD-Alcohol                                     | 64175              | PETROLEUM DISTILLATES                          | 64742964      |       |
| SDA  | 64175              | aliphatic petroleum distillate                 | 64742967      |       |
| SDA-38B  | 64175              | Deodorized Kerosene                            | 64742967      |       |
| SDA-40 (Denatured Alcohol)                     | 64175              | Aliphatic Hydrocarbon                          | 64742977      |       |
| SDA-40B Alcohol (Ethanol)                      | 64175              | Mineral Spirits                                | 64748478      |       |
| Sec-butanol                                    | 78922              | SOLVENT NAPHTHA (PETROLEUM), LIGHT ALIPHATIC   | 64752898      |       |
| sec-Butyl alcohol                              | 78922              | Mineral Spirits                                | 64761419      |       |
| Silanamine, 1,1,1-Trimethyl-n-(Trimethylsilyl) | 68909206           | Aliphatic Hydrocarbon                          | 64771728      |       |
| Silicic Acid (HASIO4), Tetrapropyl             | 682019             | Norpar 15                                      | 64771728      |       |
| Slane, Trimethoxymethyl-                       | 1185553            | Petroleum solvent                              | 64771728      |       |
| Sodium Alkyl Benzene Sulfonate                 | 2211985            | Naphthol Spirits                               | 64792489      |       |
| Sodium Cocoyl Sarcosinate                      | 61791591           | Petroleum distillates                          | 64842898      |       |
| Sodium Dimethyldithiocarbamate                 | 128041             | Alkali Surfactant NM                           | 64972196      |       |
| Sodium Dodecylbenzene Sulfonate                | 25155300           | METHYL NAPHTHALENE                             | 65996794      |       |
| Sodium Laureth Ether Sulfate                   | 9004824            | Petroleum distillates                          | 67472945      |       |
| Sodium Laureth Sulfate                         | 151213             | Quaternary Blend (w/20% ethanol)               | 67784774      |       |
| Sodium Laureth Sulfate                         | 9004824            | Coco Diethanolamide-sulfonate                  | 67785119      |       |
| Sodium Laureth-12 Sulfate                      | 9004824            | Coco Diethanolamide                            | 67785131      |       |
| Sodium Lauryl Ether Sulfate                    | 9004824            | Bismuth Octoate                                | 67874719      |       |
| Sodium Lauryl Sulfate                          | 151213             | Triton   | 67923879      |       |
| Sodium Lauryl Sulfate Ether                    | 1335724            | Triton X-200                                   | 67923879      |       |
| Sodium Molybdate                               | 7631950            | LINSEED OIL                                    | 68001261      |       |
| Sodium Oleate                                  | 143191             | Hydrocarbon resin                              | 68003510      |       |
| Sodium Pareth-25 Sulfate (w/11% ethanol)       | 68891383           | Tallow Imid Methosulfate                       | 68122861      |       |
| Sodium Tridecylbenzene Sulfonate               | 26248248           | Tallow Imid Methosulfate                       | 68122861      |       |
| Sodium Xylene Sulfonate                        | 1300727            | C12-C15 Ethoxylated Alcohol                    | 68131395      |       |
| SOL-71   | 64741657           | Ethoxylated Alcohol C12-15                     | 68131395      |       |
| Soltrol 145                                    | 64741657           | Cocoamidopropyl Amine Oxide 35%                | 68155099      |       |
| SOLVENT NAPHTHA (PETROLEUM), LIGHT ALIPHATIC   | 64742899           | Isopropyl Isosterate                           | 68171335      |       |
| SOLVENT NAPHTHA (PETROLEUM), LIGHT ALIPHATIC   | 64752898           | Sulfonated Castor Oil                          | 68187768      |       |
| Solvent Naphtha T500-100                       | 54742956           | Aliphatic petroleum distillates                | 68334305      |       |
| SOLVENT REFINED LIGHT NAPHTHA                  | 64741840           | Alkyl Dimethyl Benzyl Ammonium Chloride        | 68391015      |       |
| SOLVENT REFINED LIGHT NAPHTHENIC DISTILLATE    | 64741975           | Alkyl dimethylbenzylammonium chloride          | 68391015      |       |
| Sorbitol (D-Gluticol, C6H14O6)                 | 50704              | BTC-2125M 80% Stephan Company                  | 68391015      |       |
| SORBITOL (D-Gluticol, C6H14O6)                 | 50704              | BTC-8249 Stephan Company                       | 68391015      |       |
| Spike (Lavender Oil, Spanish)                  | 8016782            | Methyl Bis Hydroxyethyl Ammonium Methylsulfate | 68410695      |       |
| Spruce oil                                     | 8008808            | NONY PHENOL ETHYLENE OXIDE 6 MOLE              | 68412544      |       |
| Standard Denatured Alcohol                     | 77021810           | Nonyl Phenyl Ethylene Oxide 6M                 | 68412544      |       |
| Steam Distilled Wood Turpentine                | 8006642            | benzyl ammonium chloride                       | 68424851      |       |
| Stearalkonium chloride                         | 122190             | Benzylkonium Chloride (w/ 20% ethanol)         | 68424851      |       |
| Stoddard Solvent                               | 8052413            | N-Alkyl Dimethyl Benzyl Ammonium Chloride      | 68424851      |       |
| STRAIGHT RUN MIDDLE PETROLEUM                  | 64741442           | Bardac 208M Lonza                              | 68424955      |       |
| STYRENE (ethenyl benzene)                      | 100425             | Alcohol Ethoxylate                             | 68439509      |       |
| Sulfonated Castor Oil                          | 68187768           | Alkyl Olefin Sulfonate                         | 68439576      |       |
| Sun Ag Oil 7N                                  | 64741884           | Alkyl Olefin Sulfonate, Sodium Salt            | 68439576      |       |
| SUN GOLDEN OIL #91 (SUN OIL CO.)               | 64742343           | Parafin series of hydrocarbon solvents         | 68466868      |       |
| Sun Spray 6N                                   | 64741895           | C3-C4 Alkane Propellant                        | 68475592      |       |
| Sunpar 110                                     | 64741884           | C3-C4 Propellant                               | 68475592      |       |
| SWEETENED LIQUIFIED PETROLEUM GAS              | 68476858           | isobutane/propane                              | 68475592      |       |
| T 500-100                                      | 68920069           | fuel oil no. 2                                 | 68476302      |       |
| T-Amyl Alcohol                                 | 75854              | Pale Oil                                       | 68476302      |       |
| T-Butyl Alcohol                                | 75650              | Petroleum Distillate                           | 68476302      |       |
| T-Mulz 2900, Harcos, Kansas                    | 69980741           | #2 Diesel Fuel                                 | 68476346      |       |
| Tall Oil                                       | 8002264            | Diesel Fuel                                    | 68476346      |       |
| Tallow Imid Methosulfate                       | 68122861           | Petroleum Middle Distillate                    | 68476346      |       |

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|--|----------|--------------------|--|----------|
| Tallow Imid Methosulfate                           | 68122861 |                    | High Flash Naptha                                  | 68476799 |
| Tallowammonium Trimethyl Chloride                  | 8030782  |                    | A-70 Hydrocarbon Propellant                        | 68476857 |
| TEA-Laurel Sulfate                                 | 139968   |                    | ISOBUTANE/ PROPANE                                 | 68476857 |
| Technical piperonyl butoxide                       | 51036    |                    | Liquified Petroleum Gas                            | 68476857 |
| Tenneco 500/100                                    | 25551137 |                    | PROPANE/BUTANE/ISOBUTANE                           | 68476857 |
| Terpene  | 68956569 |                    | SWEETENED LIQUIFIED PETROLEUM GAS                  | 68476858 |
| TERPENE ALCOHOLS                                   | 98555    |                    | HYDROCARBON PROPELLANT                             | 68476868 |
| Terpene Hydrocarbons                               | 8002093  |                    | Isobutane/Propane                                  | 68476868 |
| Terpineol  | 8000417  |                    | L.P. Gas Propellant                                | 68476868 |
| Terpinol   | 8000417  |                    | Liquid Petroleum Propellant                        | 68476889 |
| TERT-BUTYL ALCOHOL                                 | 75650    |                    | Aromatic 200 Solvent                               | 68477316 |
| Tetrabutyl Titanate                                | 5593704  |                    | AROMATIC HYDROCARBON SOLVENT                       | 68477316 |
| Tetrachloroethylene                                | 127184   |                    | AROMATIC PETROLEUM DISTILLATE                      | 68477316 |
| Tetrachloroisophtorianitrile                       | 18947456 |                    | petroleum distillate                               | 68477316 |
| Tetraethylene Glycol                               | 112607   |                    | Mineral spirits                                    | 68513031 |
| Tetraethylene Glycol Dimethacrylate                | 109171   |                    | Butane, branched and linear                        | 68513655 |
| Tetraethylene Pentamine                            | 112572   |                    | C9-C12 Alkylbenzenes                               | 68515253 |
| tetrahydro-3,5-dimethyl1-2-H-1,3,5-thiadiazine-2-e | 533744   |                    | Disodium Cocamide Mipa Sulfosuccinate              | 68515651 |
| Tetrahydrofuran                                    | 109999   |                    | Ethoxylated Alcohol C12-16                         | 68551122 |
| TETRAHYDROFURFURYL ALCOHOL                         | 97994    |                    | Ethoxylated Alcohol C12-16                         | 68551122 |
| Tetramethylthiuran Disulfide                       | 137268   |                    | Petroleum Distillate                               | 68551155 |
| Tetrapropyl Orthosilicate                          | 68209    |                    | C9-11 ISOPARAFFIN                                  | 68551166 |
| Tetrapropyl Orthosilicate                          | 682019   |                    | C11-12 Isoparaffin                                 | 68551177 |
| Tetrasodium EDTA                                   | 64028    |                    | C11-13 Isoparaffin Solvent                         | 68551177 |
| tetrohydofuran                                     | 2455245  |                    | Isomeric Hydrocarbons                              | 68551188 |
| Texanol  | 25265774 |                    | LPA Petroleum Distillate                           | 68551188 |
| Texanol iso-butyrat                                | 6846500  |                    | ISOPARAFFINIC PETROLEUM                            | 68551199 |
| Textile spirits                                    | 64741840 |                    | Ethoxy Sulfate, Neodol 25-3S                       | 68586342 |
| Textile Spirits                                    | 110543   |                    | C-8/C-10 Alcohol                                   | 68603156 |
| Thiobencarb  | 28249776 |                    | Coconut Diethanolamine                             | 68603429 |
| Thiodan - Technical                                | 115297   |                    | Fatty Diethanolamide                               | 68604353 |
| Thioglycolate, Ammonium Salt                       | 5421465  |                    | Orange Oil   | 68606940 |
| Thioglycolic Acid                                  | 68111    |                    | 2-Ethanolhexanol distillates                       | 68609687 |
| Thiram - Technical                                 | 137268   |                    | Alkyl Glycidyl Ether                               | 68609972 |
| TOLUENE  | 108883   |                    | Methyl Dihydroxyethylisotridecyloxypropyl Ammonium | 68610195 |
| Trans 1,3-Dichloropropene                          | 10061026 |                    | d-Limonene   | 68647723 |
| trans-Decalin                                      | 49327    |                    | Orange Oil Terpenes                                | 68647723 |
| Tri (beta-chloropropyl) phosphate                  | 13674845 |                    | Orange Terpene                                     | 68647723 |
| Tributoxy Ethyl Phosphate                          | 78513    |                    | Morpholine   | 68855547 |
| TRIBUTOXY ETHYL PHOSPHATE                          | 78513    |                    | Sodium Pareth-25 Sulfate (w/11% ethanol)           | 68891383 |
| Tributoxyethyl Phosphate                           | 52686    |                    | Silanamine, 1,1,1-Trimethyl-n-(Trimethylsilyl)     | 68909206 |
| Trichlorfon  | 79016    |                    | Witch Hazel  | 68916392 |
| Trichloroethylene                                  | 75694    |                    | Witch Hazel Distillate                             | 68916392 |
| Trichlorofluoromethane (CFC-11)                    | 76131    |                    | Witch Hazel Distillate                             | 68916781 |
| Trichlorotrifluoroethane (CFC-113)                 | 102716   |                    | Lemon Oil  | 68916892 |
| Triethanolamine                                    | 11178771 |                    | D-Limonene   | 68917577 |
| Triethanolamine Lauryl Sulfate                     | 122521   |                    | Orange Oil Terpenes                                | 68917577 |
| TRIETHYL PHOSPHITE                                 | 121448   |                    | Triethylene Tetramine                              | 68919799 |
| Triethylamine                                      | 112276   |                    | T 500-100  | 68920069 |
| Triethylene Glycol                                 | 112276   |                    | Phenol Isopropylated, Phosphate                    | 68937417 |
| TRIETHYLENE GLYCOL                                 | 112492   |                    | p-Menthadiene                                      | 68956569 |
| Triethylene Glycol Dimethyl Ether                  | 143226   |                    | P-Menthadienes                                     | 68956569 |
| TRIETHYLENE GLYCOL MONOBUTYL ETHER                 | 68919799 |                    | Terpene  | 68956569 |
| Triethylene Tetramine                              | 280579   |                    | Alkyl Dimethyl Ethyl Benzyl Ammonium Chloride      | 68956790 |
| TRIETHYLEDIAMINE                                   | 75467    |                    | LINEAR ALCOHOL ETHOXYLATE                          | 69013189 |
| Trifluoromethane (HFC-23)                          | 1582098  |                    | Polyglycol 26-3                                    | 69029396 |
| Trifluralin  | 25551137 |                    | Polyglycol 26-3                                    | 69029396 |
| Trimethyl Benzene                                  | 25513648 |                    | Cyclomethicone                                     | 69430246 |
| Trimethylhexamethylenediamine                      | 115866   |                    | Cyclomethicone (DC 244)                            | 69430246 |
| Triphenol Phosphate                                | 25498491 |                    | Cyclomethicone (DC245/345)                         | 69430246 |
| TRIPROPYLENE GLYCOL                                | 20324338 |                    | CYCLOMETHICONE TETRAMER                            | 69430246 |
| Tripropylene Glycol Methyl Ether                   | 25498491 |                    | Dow Corning 344                                    | 69430246 |
| Tripropylene Glycol Methyl Ether                   | 126114   |                    | T-Mulz 2900, Harcos, Kansas                        | 69980741 |
| Tris (hydroxymethyl) nitromethane                  | 67923879 |                    | S&S, Di-Me,Hydroxy-Terminated UVCB                 | 70131678 |
| Triton   | 67923879 |                    | X 22-160   | 70131678 |
| Triton X-200                                       | 67923879 |                    | Modified Polyethoxylated Alcohol                   | 70321561 |
| Turpentine   | 8006642  |                    | MODIFIED POLYETHOXYLATED ALCOHOL                   | 70321561 |

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|--|--------------------|----------|--|----------|
| Turpentine                             |                    | 9005907  | 2-Methoxy-1-Propanol Acetate                             | 70657704 |
| Turpentine Oil Resin                   |                    | 8052140  | Cocoamidopropyl Betaine                                  | 70851079 |
| Undecane                               |                    | 1120214  | Emcol 14   | 71012107 |
| Undecenoic Acid                        |                    | 112389   | Orchex 796   | 72623848 |
| Unsaturated Polyester Resin            |                    | 25037665 | Dialkyl methyl benzylammonium chloride                   | 73049759 |
| URETHANE DIMETHACRYLATE                |                    | 39318699 | Isohexane  | 73513425 |
| V.M.& P. Naphtha                       |                    | 64742896 | Standard Denatured Alcohol                               | 77021810 |
| Vegetable Glycerin                     |                    | 56815    | kerosene   | 80082061 |
| Vinyl acetate                          |                    | 108054   | mineral spirits  | 80524137 |
| VM & P NAPHTHA                         |                    | 8032324  | Mineral Spirits  | 80542413 |
| VM & P Naptha                          |                    | 64742899 | Imazaquin  | 81335479 |
| White Oil No. 9T                       |                    | 8042475  | PM Acetate   | 84540578 |
| Wickenol                               |                    | 22047490 | Witch Hazel Distillate                                   | 84696195 |
| Wilcolate A                            |                    | 151213   | Witch Hazel Extract                                      | 84696195 |
| Witch Hazel                            |                    | 68916392 | c6-oxo Alcohol Acetate                                   | 88230357 |
| Witch Hazel Distillate                 |                    | 68916392 | DIETHYLENE GLYCOL METHYL ETHERS                          | 89399280 |
| Witch Hazel Distillate                 |                    | 68916781 | Alkyl Acetate  | 90438792 |
| Witch Hazel Distillate                 |                    | 84696195 | Oxo-Heptyl Acetate                                       | 90438792 |
| Witch Hazel Extract                    |                    | 84696195 | Refined Petroleum Distillate                             | 92045379 |
| X 22-160                               |                    | 70131678 | Ethyl Alcohol  | 97702170 |
| Xylene                                 |                    | 108383   | SD 40 Alcohol  | 97702180 |
| Xylene                                 |                    | 1330207  | 1,1,1,2,3,4,4,5,5,5-Decafluoropentane (HFC 43-10mee)     | *****    |
| Xylene (Mixture)                       |                    | 1330207  | HFC 43-10mee (1,1,1,2,3,4,4,5,5,5-Decafluoropentane)     | *****    |
| Xylene (o)                             |                    | 95476    | 1-Ethoxy-1,1,2,2,3,3,4,4,4-nonfluorobutane (C4F9OC2H5)   | *****    |
| KYLENE (p)                             |                    | 106423   | C4F9OC2H5 (1-Ethoxy-1,1,2,2,3,3,4,4,4-nonfluorobutane)   | *****    |
| Xylene in technical - Methyl Parathion |                    | 1330207  | 2-(Ethoxydifluoromethyl)-1,1,1,2,3,3-heptafluoropropane  | *****    |
| Xylene Mixed O, M, & P Isomers         |                    | 1330207  | 2-(Ethoxydifluoromethyl)-1,1,1,2,3,3-heptafluoropropane  | *****    |
| Xylene-range aromatic solvent          |                    | 64742954 | 1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-butane (C4F9OCH3) | *****    |
| Xylenols - mixed                       |                    | 1300716  | C4F9OCH3 (1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-butane) | *****    |
| Xylol (p)                              |                    | 106423   | 2-(Difluoromethoxymethyl)-1,1,1,2,3,3-heptafluoropropane | *****    |
| Zinc Napthenate                        |                    | 12001853 | 2-(Difluoromethoxymethyl)-1,1,1,2,3,3-heptafluoropropane | *****    |



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## About the ChemFinder WebServer Project

On the face of it, a way to search for chemical compounds over the World Wide Web is not a novel concept. WWW-based chemical search engines (the original Macintosh version of the ChemFinder WebServer among them) have existed since at least mid-1995. General-purpose databases of WWW contents (such as Yahoo and Alta Vista) have existed far longer. So what's the deal with this ChemFinder WebServer?

The key, you might say, is in the chemistry. It's one thing to pop over to Lycos and do a search for all references to Aluminum Hydroxide. It's another thing to actually find them -- especially if the information you want is at a site in Australia under the listing Aluminium Hydroxide. Or if there is simply a passing mention of the compound with CAS RN 21645-51-2. Or a compound with the molecular formula Al(OH)<sub>3</sub>.

By working from a single master list of chemical compounds, the ChemFinder WebServer avoids these problems, and lets you find the information you want, faster. In generating this database, we have also taken pains to identify and correct the obvious errors (like 'mehtyl', as well as invalid CAS RNs) that account for 3-5% of all chemical information on the WWW. Very likely we have introduced some new and exciting mistakes of our own, but we are confident that the overall quality of the ChemFinder WebServer data far surpasses the bulk of the information that it indexes.

Because the ChemFinder WebServer is a chemical database, it can also provide information that a general-purpose WWW index cannot, including physical property data and 2D chemical structures. This information is somewhat sparse at the moment, but is very good for the several thousand most-common compounds. We are constantly working on getting more data, and we expect the ChemFinder WebServer only to keep improving.

As an almost-incidental side benefit, the list of sites indexed is also the largest single list of chemical

information sites (by at least double the size of the next-largest) that we are aware of.

### Technical Specifications

The ChemFinder WebServer is currently running on a 266 MHz Pentium II machine. It uses WebSite 1.1 to communicate with ChemDraw Pro 4.5 and ChemFinder Pro 4.0 via a Visual Basic CGI. There are over 75,000 unique substances indexed in the ChemFinder WebServer database from over 350 sites, and these numbers change on a continual basis.



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# General Searching Instructions -- Simple Search Form

The Simple query form of the ChemFinder WebServer is designed to make it as easy as possible to locate common types of chemical information. You may enter a chemical **name**, **formula**, **molecular weight**, or **CAS Registry Number**. The ChemFinder WebServer will identify the type of search you want, and provide the hits accordingly. To view in ChemDraw or Chem3D the chemical structures of the compounds you find, you will also need to [configure your browser to view chemical structures in ChemDraw or Chem3D](#).

If you plan on regularly viewing chemical structures in ChemDraw or Chem3D, you probably want to use the [Plug-In-enhanced version of the ChemFinder WebServer](#), which offers more precise control over search terms as well.

**Name**

Name searches will look for your standard chemical names, such as '1,4-dimethylbenzene' or 'cyclobutadiene'. An asterisk (\*) serves as a wildcard, allowing the creation of "name starts with", "name ends with", and "name contains" searches. For example, '\*benzene' will match '1,2-dichlorobenzene'.

The ChemFinder Webserver is *very* tolerant of typographic variations in names. All of '1,2-dichlorobenzene', '1 2 dichlorobenzene', and '1.2dichloro benzene' (and many others) will match '1,2-dichlorobenzene'. Even more-complicated variations will be recognized: 'acetic acid, sodium salt' is a perfectly reasonably search string for 'sodium acetate'. 'Cupric chloride' will match 'copper (II) chloride' and so on. This intelligence is far from absolute, but it should greatly increase the chances of your finding the information you want on the first try.

## **Formula**

Formula searches are, foremost, case **insensitive**. 'c6h6' works as well as 'C6H6' and 'c6H6'. It is possible to enter an ambiguous formula ('cooh' is interpreted as 'COOH', not 'CoOH'), so if you have problems, use

proper capitalization.

Formula searches also support ranges of elements. A query like 'C6Cl1-6' will find all chlorinated benzenes (and possibly a bunch of other stuff as well). It is perfectly reasonable to use zero in a range. A query like 'c4h10o0-1' will find both butane and butanol (and possibly other stuff).

Note that not all structures in the database currently have chemical formulas assigned.

### Molecular Weight

MW searches understand significant digits, so a search for 'MW is 100' will find all compounds whose molecular weight is > 99.5 and < 100.5.

Note that not all structures in the database currently have molecular weights assigned.

### CAS Registry Number

**CAS Registry Number** searches attempt to locate a substance by its Chemical Abstracts Service Registry Number. The standard format for a CAS RN is xxxxxx-xx-x, but the ChemFinder Webserver will recognize the same number as valid even without the dashes. Leading zeroes are optional. Since the last digit of each CAS RN is a built-in checksum, the ChemFinder Webserver is able to recognize many of the more common mistypings.



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# 2,2,4-trimethyl-1,3-pentanediol isobutyrate

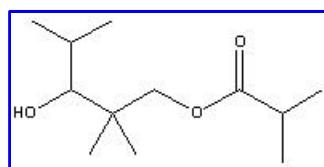
[25265-77-4]

**Synonyms:** Texanol; Propanoic acid, 2-methyl-, monoester with 2,2,4-trimethyl-1,3-pentanediol; 2,2,4-Trimethyl-1,3-pentanediolmono(2-methylpropanoate); 2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate; isobutyric acid, monoester with 2,2,4-trimethylpentane-1,3-diol

**C<sub>12</sub>H<sub>24</sub>O<sub>3</sub>**  
216.32

This picture is a  
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lets you search by drawing  
structures in your web browser.  
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|                           |          |                         |           |
|---------------------------|----------|-------------------------|-----------|
| <b>Melting Point (°C)</b> | --       | <b>Specific Gravity</b> | 0.95      |
| <b>Boiling Point (°C)</b> | 244      | <b>Vapor Density</b>    | --        |
| <b>Evaporation Rate</b>   | --       | <b>Water Solubility</b> | --        |
| <b>Flash Point (°C)</b>   | --       | <b>EPA Code</b>         | --        |
| <b>DOT Number</b>         | --       | <b>RTECS</b>            | UF6000000 |
| <b>Comments</b>           | Solvent. |                         |           |

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[8\(e\) TRIAGE Chemical Studies Database](#)

[Acros Chemicals Catalog \(with MSDSs\)](#)

[2,2,4-Trimethyl-1,3-pentanediolmono\(2-methylpropanoate\)](#)

[NFPA Chemical Hazard Labels](#)

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## **Appendix B:**

### **Key Tables from 1993 Survey**

The following are key tables excerpted from the final report of the ARB's 1993 architectural coatings survey, entitled *Survey of Emissions from Solvent Use, Volume II: Architectural Coatings*, September 1994.

## 1990 ARB AIM Coating Survey

Table 1a. California Based Companies Reporting 1990 Sales of  
Architectural and Industrial Maintenance Coatings

|  |  |
|--|--|
| AC Products, Inc.  | L. M. Scofield Company                             |
| Ameritone Paint Corporation                                  | Lahabra Products, Inc.                             |
| Ameron PCD   | Life Paint Company                                 |
| Behr Process Corporation                                     | Lyle Van Patten Company, Inc.                      |
| Benjamin Moore & Company                                     | Major Paint Company                                |
| Bithell, Inc. / Virtrochem                                   | Merton International, Inc.                         |
| Cal Western Paints, Inc.                                     | Norton & Son of California, Inc.                   |
| Contract Coatings Corporation                                | Old Quaker Paint Company                           |
| Corthem Corporation  | Parks Corporation                                  |
| D. J. Simpson Company, Inc. DBA Simpson Coatings Group, Inc. | Performance Coatings, Inc.                         |
| Davis Colors   | Pervco Paint Company                               |
| Davin Paint Company  | Pierce & Stevens Corporation                       |
| Decatrend Paints   | Pioneer Coatings Co.                               |
| Deft, Inc.   | Ponderosa Paint Co.                                |
| Devco Coatings Co.   | Preserva-Products, Inc.                            |
| Duckback Products, Inc.                                      | Pride Paint Company                                |
| Dunn-Edwards Corporation                                     | R. J. McGlemon Company, Inc.                       |
| Early American Paint & Varnish Company                       | Samuel Cabot, Inc.                                 |
| Ellis Paint Co.  | San Luis Paints                                    |
| Epmar Corporation  | Scotch Paint Corp.                                 |
| Epoxyline Corporation  | Sinclair Paint Company / Division of Insilco Corp. |
| Evr-Gard Coatings  | Smiland Paint Company                              |
| Fine Line Paint Corp.  | Southwest Division, Witco Corporation              |
| Flamor Chemical Company                                      | Spectra-Tone Paint                                 |
| Frazee Industries, Inc.                                      | Surface Protection Industries, Inc.                |
| Flecto Company, Inc.   | T. J. Westlund, Inc., DBA Humboldt Paint Factory   |
| Fuller - O'Brien Paints (The O'Brien Corporation)            | Textured Coatings of America                       |
| Guardsman Products, Inc., Coatings Group                     | Tresco Paint Company, Inc.                         |
| Henry Company  | Triangle Coatings                                  |
| Hill Brothers Chemical Company                               | U.S. Cellulose Co., Inc.                           |
| Hoffmann Paint Manufacturing Company                         | Universal Paint Corp.                              |
| J. S. Williams & Sons  | W. R. Meadows of California, Inc.                  |
| Kelly-Moore Paint Company, Inc.                              | Western Colloid Products                           |

## 1990 ARB AIM Coating Survey

**Table 1b. Non-California Based Companies Reporting 1990 Sales of Architectural and Industrial Maintenance Coatings**

|   |   |
|---|---|
| 3M<br>Absolute Coatings, Inc.<br>Akzo Coatings, Inc. - Georgia<br>Akzo Coatings, Inc. - Michigan<br>Alfa Ink Division<br>American Safety Technologies, Inc.<br>Automotive Finishes, Inc.<br>Briner Paint Manufacturing Co., Inc.<br>California Products Corporation<br>CarboLineum Wood Preserving Co.<br>Champion Coatings<br>Chase Products Company<br>Childers Products Company<br>Coatings for Industry, Inc.<br>Consumers Paint Factory, Inc.<br>Continental Products Company<br>CRC Industries, Inc.<br>Crescent Bronze Powder Company, Inc.<br>Daly's, Inc.<br>Dampney Company, Inc.<br>DAP, Inc.<br>Darworth Company<br>Dexter Packaging Products Division<br>Dyco Paints, Inc.<br>Dynaroll / Bondo Corporation<br>E.S.P., Inc.<br>Enerfab Corporation<br>Euclid Chemical Company<br>Fields Corporation / American Tar Company<br>Flame Control Coatings, Inc.<br>Frost Paint & Oil Corporation<br>Gaco Western, Inc.<br>Gardner Asphalt Corp.<br>GC Electronics<br>Gibson-Homans Company<br>Glidden Company<br>Gulf Coast Paint Manufacturing, Inc.<br>Harcos Chemical Coatings, Inc.<br>Hartin Paint & Filler Corp.<br>Hempel Coatings (USA), Inc.<br>Huntington Laboratories, Inc.<br>Hydrozo, Inc.<br>Imperial Paint Company, Inc.<br>Industrial Epoxy Coatings, Inc.<br>Iowa Paint Mfg. Co., Inc.<br>ITW Philadelphia Resins<br>James B. Day & Company<br>Jones Blair Company<br>Keeler & Long, Inc.<br>Klinger Paint Company, Inc.<br>Kool Seal, Inc.<br>Lilly Industries, Inc. - Perfection Paint Division<br>Mameco International, Inc.<br>Maquer Paint/McGrevor Coatings | Matthews Paint Company<br>Minwax Company, Inc.<br>Multi-Clean Division of Hako Minuteman<br>National Polymers, Inc.<br>National Varnish Company<br>Okon, Inc.<br>Porter International (Division of Courtland Coatings, USA)<br>PPG Architectural Finishes, Inc.<br>Prax & Lambert, Inc.<br>Proko Industries, Inc.<br>Rainbow Coatings Corporation<br>Republic Powdered Metals, Inc.<br>Rich Art Color Co., Inc.<br>Robinson Chemical Coatings, Inc.<br>Rudd Company, Inc.<br>Rust-Oleum Corporation<br>Schulte Paint Manufacturing Company, Inc.<br>Seagrave Coatings Corporation of Virginia, Seaguard Division<br>Sheboygan Paint Company<br>Sherwin-Williams Company<br>Sigma Coatings<br>Somay Products, Inc.<br>Southwestern Petroleum Corporation<br>Standard T Chemical<br>Star Bronze Company, Inc.<br>Steelecote Manufacturing Company<br>Sunark - Natasco C/O MPV Company<br>Sunnyside Corporation<br>Tapecoat Company<br>Tenax Finishing Products Company<br>Texas Refinery Corporation<br>Thompson & Formby, Inc.<br>Thorco System Products<br>Tnemec Company, Inc.<br>Torginol, Inc. (Previously Peterson Chemical Corporation)<br>Tru-Test Manufacturing Company<br>United Gilsonite Laboratories<br>United Coatings, Inc.<br>United Paint Manufacturing Company, DBA United Coatings<br>Valspar Corporation (Consumer Division)<br>Valspar Corporation (Federal International Chem. Div.)<br>Valspar Corporation (Maintenance and Marine Division)<br>Valspar Corporation (McCloskey Division)<br>Vanex, Inc.<br>W.R. Grace & Co. - Conn<br>Waterlox Chemical & Coatings Corporation<br>Wellborn - De Corporation<br>Westinghouse - Electrical Materials Division<br>William Zinsser & Company, Inc.<br>Wiltech Corporation<br>Wood-Kote Products<br>Xim Products, Inc.<br>Zehring Corporation<br>ZRC Products Company |
|---|---|

## 1990 ARB AIM Coating Survey

**Table 3. Summary of 1990 California Sales of Architectural and Industrial Maintenance Coatings.**

| Coating Category                            | No. of Companies | No. of Products | Water-based Coating Sales<br>(1,000 Gal) | Solvent-based Coating Sales<br>(1,000 Gal) | Total 1990 Coating Sales<br>(1,000 Gal) |
|---|------------------|-----------------|--|--|---|
| Anti-Graffiti Coating                       | 8                | 22              | 30                                       | 9  | 38                                      |
| Below-Ground Wood Preservatives             | 4                | 4               | 0  | 37   | 37                                      |
| Clear Wood Finishes - Lacquers              | 27               | 129             | 48                                       | 845  | 893                                     |
| Clear Wood Finishes - Sanding Sealers       | 22               | 51              | 9  | 378  | 387                                     |
| Clear Wood Finishes - Varnishes             | 47               | 348             | 45                                       | 816  | 861                                     |
| Concrete Curing Compounds                   | 6                | 24              | 169                                      | 29   | 197                                     |
| Dry Fog Coatings                            | 15               | 29              | 24                                       | 81   | 105                                     |
| Fire Retardant Coating - Pigmented          | 7                | 12              | 7  | 16   | 23                                      |
| Flats                                       | 53               | 1,105           | 32,116                                   | 61   | 32,177                                  |
| Form-Release Compounds                      | 4                | 6               | 4  | 6  | 10                                      |
| Graphic Arts (sign) Coatings                | 8                | 165             | 5  | 528  | 533                                     |
| High Temperature Coatings                   | 18               | 54              | 0  | 13   | 13                                      |
| Industrial Maintenance Coatings             | 77               | 1,248           | 241                                      | 2,837                                      | 3,078                                   |
| Mastic Texture Coatings                     | 21               | 86              | 603                                      | 172  | 775                                     |
| Metallic Pigmented Coatings                 | 39               | 125             | 11                                       | 355  | 366                                     |
| Nonflats - High Gloss                       | 44               | 420             | 687                                      | 1,330                                      | 2,017                                   |
| Nonflats - Medium Gloss                     | 51               | 810             | 12,645                                   | 1,471                                      | 14,116                                  |
| Nonflats - Low Gloss                        | 45               | 398             | 2,967                                    | 94   | 3,061                                   |
| Nonflats - Quick Dry Enamels                | 19               | 42              | 1  | 483  | 484                                     |
| Opaque Stains                               | 27               | 130             | 1,528                                    | 258  | 1,785                                   |
| Pre-treatment Wash Primers                  | 15               | 21              | 4  | 18   | 21                                      |
| Primers Sealers and Undercoaters            | 83               | 568             | 3,917                                    | 1,871                                      | 5,788                                   |
| Quick Dry Primers, Sealers & Undercoaters   | 32               | 84              | 92                                       | 285  | 377                                     |
| Roof Coatings                               | 30               | 132             | 1,365                                    | 617  | 1,982                                   |
| Semi-transparent Stains                     | 46               | 451             | 574                                      | 1,163                                      | 1,736                                   |
| Semi-transparent & Clear Wood Preservatives | 11               | 66              | 32                                       | 231  | 264                                     |
| Shellacs - Pigmented                        | 4                | 5               | 0  | 74   | 74                                      |
| Swimming Pool Coatings                      | 4                | 4               | 0  | 3  | 3                                       |
| Traffic Paints                              | 30               | 189             | 1,037                                    | 3,200                                      | 4,237                                   |
| Waterproofing Sealers - Clear               | 29               | 82              | 268                                      | 681  | 950                                     |
| Waterproofing Sealers - Pigmented           | 12               | 18              | 19                                       | 55   | 74                                      |
| Other Specialty Coatings (1)                | 14               | 55              | 31                                       | 88   | 118                                     |
| Other (2)                                   | 36               | 113             | 317                                      | 156  | 473                                     |
| All coating types pooled                    | 174              | 6,996           | 58,796                                   | 18,260                                     | 77,057                                  |

(1) Other specialty coatings include bond breakers, clear fire retardant coatings, magnesite cement coatings, multi-color coatings, opaque wood preservatives, clear shellacs, and swimming pool repair coatings.

(2) Products not classified according to any of the ARB specified categories.

## 1990 ARB AIM Coating Survey

**Table 4a. Estimated Emissions from 1990 California Sales of Architectural and Industrial Maintenance Coatings.  
WATER-BORNE COATINGS**

| Coating Category                            | Total 1990<br>Coating Sales<br>(1,000 gal.) | SW Avg.<br>Percent<br>Solids | SW Avg.<br>Material<br>VOC (1)<br>(g/l) | SW Avg.<br>Regulatory<br>VOC (2)<br>(g/l) | Estimated<br>VOC Emissions<br>(tons/yr) |
|---|---|------------------------------|---|---|---|
| Anti-Graffiti Coating                       | 30  | 51.9                         | 66.2                                    | 123.2                                     | 8                                       |
| Clear Wood Finishes - Lacquers              | 48  | 28.5                         | 122.9                                   | 302.1                                     | 25                                      |
| Clear Wood Finishes - Sanding Sealers       | 9   | 22.6                         | 84.3                                    | 293.6                                     | 3                                       |
| Clear Wood Finishes - Varnishes             | 45  | 28.2                         | 79.2                                    | 205.6                                     | 15                                      |
| Concrete Curing Compounds                   | 169   | 11.0                         | 25.1                                    | 118.3                                     | 18                                      |
| Dry Fog Coatings                            | 24  | 33.3                         | 50.2                                    | 75.6                                      | 5                                       |
| Fire Retardant Coating - Pigmented          | 7   | 45.8                         | 9.1                                     | 26.0                                      | 0                                       |
| Flats                                       | 32,116                                      | 38.9                         | 44.1                                    | 104.7                                     | 5,889                                   |
| Form-Release Compounds                      | 4   | 2.2                          | 49.3                                    | 592.4                                     | 1                                       |
| Graphic Arts (sign) Coatings                | 5   | 40.6                         | 44.3                                    | 97.3                                      | 1                                       |
| Industrial Maintenance Coatings             | 241   | 38.4                         | 96.7                                    | 205.9                                     | 97                                      |
| Mastic Texture Coatings                     | 603   | 50.1                         | 44.7                                    | 87.6                                      | 112                                     |
| Metallic Pigmented Coatings                 | 11  | 55.5                         | 9.3                                     | 18.0                                      | 0                                       |
| Nonflats - High Gloss                       | 687   | 39.3                         | 98.2                                    | 211.4                                     | 281                                     |
| Nonflats - Medium Gloss                     | 12,645                                      | 36.9                         | 70.3                                    | 162.3                                     | 3,699                                   |
| Nonflats - Low Gloss                        | 2,967                                       | 37.1                         | 63.6                                    | 153.5                                     | 785                                     |
| Nonflats - Quick Dry Enamels                | 1   | 33.8                         | 43.9                                    | 106.9                                     | 0                                       |
| Opaque Stains                               | 1,528                                       | 36.1                         | 54.3                                    | 133.0                                     | 345                                     |
| Pre-treatment Wash Primers                  | 4   | 1.0                          | 293.0                                   | 702.0                                     | 5                                       |
| Primers Sealers and Undercoaters            | 3,917                                       | 35.2                         | 44.7                                    | 116.8                                     | 729                                     |
| Quick Dry Primers, Sealers & Undercoaters   | 92  | 38.3                         | 42.2                                    | 96.8                                      | 16                                      |
| Roof Coatings                               | 1,365                                       | 44.4                         | 36.2                                    | 67.2                                      | 206                                     |
| Semi-transparent Stains                     | 574   | 18.0                         | 72.9                                    | 257.8                                     | 174                                     |
| Semi-transparent & Clear Wood Preservatives | 32  | 15.7                         | 47.9                                    | 279.6                                     | 6                                       |
| Traffic Paints                              | 1,037                                       | 54.9                         | 78.3                                    | 120.5                                     | 338                                     |
| Waterproofing Sealers - Clear               | 268   | 9.7                          | 20.0                                    | 158.2                                     | 22                                      |
| Waterproofing Sealers - Pigmented           | 19  | 46.7                         | 28.9                                    | 58.3                                      | 2                                       |
| Other Specialty Coatings (3)                | 31  | 16.2                         | 317.7                                   | 560.4                                     | 41                                      |
| Other (4)                                   | 317   | 44.2                         | 42.5                                    | 88.1                                      | 56                                      |
| All coating types pooled                    | 58,796                                      | 38.2                         | 52.7                                    | 124.3                                     | 12,880                                  |

- (1) Sales weighted average grams of volatile organic compounds (VOC) per liter of material.
- (2) Sales weighted average grams of volatile organic compounds (VOC) per liter of material plus thinning solvent less water less exempt compounds.
- (3) "Other specialty coatings" include bond breakers, clear fire retardant coatings, magnesite cement coatings, multi-color coatings, opaque wood preservatives, clear shellacs, and swimming pool repair coatings.
- (4) Products not classified according to any of the ARB specified categories.

**1990 ARB AIM C Emissions Survey**

**Table 4b. Estimated Emissions from 1990 California Sales of Architectural and Industrial Maintenance Coatings.**  
**Solvent-Borne Coatings**

| Coating Category                          | Total 1990<br>Coating Sale<br>(1,000 Gal) | SW Avg<br>Percent<br>Solids | SW Avg(1)<br>Material<br>VOC(g/l) | SW Avg VOC(2)<br>at Max Thinning<br>VOC (g/l) | SW Avg Regulatory<br>VOC (g/l) | SW Avg.<br>Recomm.<br>Thinning | Estimated VOC Emissions (tons/year) |                         |        |                    |
|---|---|-----------------------------|-----------------------------------|---|--------------------------------|--------------------------------|-------------------------------------|-------------------------|--------|--------------------|
|   |   |                             |                                   |   |                                |                                | from<br>Material                    | from Recom.<br>Thinning | Total  | Total<br>Max Thin. |
| Anti-Graffiti Coating                     | 9   | 81.3                        | 161                               | 161   | 173                            | 0.00                           | 6                                   | 0                       | 6      | 6                  |
| Below-Ground Wood Preservatives           | 37  | 51.4                        | 377                               | 377   | 377                            | 0.00                           | 58                                  | 0                       | 58     | 58                 |
| Clear Wood Finishes - Lacquers            | 845                                       | 26.0                        | 666                               | 669   | 668                            | 0.93                           | 2,341                               | 29                      | 2,370  | 2,378              |
| Clear Wood Finishes - Sanding Sealers     | 378                                       | 22.9                        | 667                               | 668   | 667                            | 0.00                           | 1,048                               | 0                       | 1,048  | 1,055              |
| Clear Wood Finishes - Varnishes           | 816                                       | 44.2                        | 432                               | 436   | 434                            | 0.00                           | 1,467                               | 0                       | 1,467  | 1,501              |
| Concrete Curing Compounds                 | 29  | 14.0                        | 794                               | 794   | 794                            | 0.00                           | 94                                  | 0                       | 94     | 94                 |
| Dry Fog Coatings                          | 81  | 42.8                        | 372                               | 373   | 392                            | 0.00                           | 125                                 | 0                       | 125    | 126                |
| Fire Retardant Coating - Pigmented        | 16  | 53.0                        | 373                               | 373   | 373                            | 0.00                           | 25                                  | 0                       | 25     | 25                 |
| Flats                                     | 61  | 47.0                        | 347                               | 359   | 362                            | 0.45                           | 88                                  | 1                       | 89     | 94                 |
| Form-Release Compounds                    | 6   | 31.9                        | 597                               | 597   | 597                            | 0.00                           | 15                                  | 0                       | 15     | 15                 |
| Graphic Arts (sign) Coatings              | 528                                       | 60.8                        | 412                               | 428   | 412                            | 0.22                           | 904                                 | 4                       | 908    | 977                |
| High Temperature Coatings                 | 13  | 36.6                        | 539                               | 556   | 539                            | 0.00                           | 30                                  | 0                       | 30     | 33                 |
| Industrial Maintenance Coatings           | 2,837                                     | 56.5                        | 364                               | 390   | 374                            | 1.12                           | 4,301                               | 117                     | 4,418  | 4,859              |
| Mastic Texture Coatings                   | 172                                       | 58.3                        | 186                               | 276   | 274                            | 14.96                          | 133                                 | 94                      | 227    | 230                |
| Metallic Pigmented Coatings               | 355                                       | 52.9                        | 470                               | 472   | 470                            | 0.01                           | 694                                 | 0                       | 694    | 704                |
| Nonflats - High Gloss                     | 1,330                                     | 61.2                        | 313                               | 318   | 348                            | 0.56                           | 1,734                               | 27                      | 1,762  | 1,798              |
| Nonflats - Medium Gloss                   | 1,471                                     | 67.4                        | 282                               | 283   | 298                            | 0.29                           | 1,723                               | 16                      | 1,738  | 1,746              |
| Nonflats - Low Gloss                      | 94  | 53.3                        | 374                               | 393   | 384                            | 2.71                           | 147                                 | 9                       | 156    | 165                |
| Nonflats - Quick Dry Enamels              | 483                                       | 55.5                        | 402                               | 403   | 402                            | 0.00                           | 808                                 | 0                       | 808    | 810                |
| Opaque Stains                             | 258                                       | 50.9                        | 394                               | 405   | 395                            | 0.00                           | 422                                 | 0                       | 422    | 446                |
| Pre-treatment Wash Primers                | 18  | 8.4                         | 729                               | 736   | 740                            | 3.67                           | 53                                  | 2                       | 55     | 56                 |
| Primers Sealers and Undercoaters          | 1,871                                     | 54.4                        | 322                               | 331   | 371                            | 1.22                           | 2,504                               | 84                      | 2,588  | 2,720              |
| Quick Dry Primers, Sealers & Undercoaters | 285                                       | 46.3                        | 369                               | 386   | 418                            | 3.94                           | 438                                 | 41                      | 479    | 483                |
| Roof Coatings                             | 617                                       | 70.1                        | 263                               | 263   | 263                            | 0.00                           | 674                                 | 0                       | 674    | 674                |
| Semi-transparent Stains                   | 1,163                                     | 44.3                        | 421                               | 421   | 432                            | 0.00                           | 2,037                               | 0                       | 2,037  | 2,038              |
| Semi-transparent Clear Wood Preservatives | 231                                       | 50.5                        | 367                               | 367   | 367                            | 0.00                           | 353                                 | 0                       | 353    | 353                |
| Shellacs - Pigmented                      | 74  | 33.6                        | 523                               | 544   | 544                            | 6.14                           | 162                                 | 17                      | 179    | 179                |
| Swimming Pool Coatings                    | 3   | 31.4                        | 572                               | 575   | 572                            | 0.00                           | 8                                   | 0                       | 8      | 8                  |
| Traffic Paints                            | 3,200                                     | 78.9                        | 117                               | 118   | 132                            | 0.00                           | 1,563                               | 0                       | 1,563  | 1,565              |
| Waterproofing Sealers - Clear             | 681                                       | 41.2                        | 410                               | 410   | 418                            | 0.00                           | 1,162                               | 0                       | 1,162  | 1,162              |
| Waterproofing Sealers - Pigmented         | 55  | 49.0                        | 399                               | 399   | 399                            | 0.00                           | 92                                  | 0                       | 92     | 92                 |
| Other Specialty Coatings (4)              | 88  | 30.4                        | 567                               | 597   | 588                            | 0.00                           | 206                                 | 0                       | 206    | 269                |
| Other (5)                                 | 156                                       | 47.5                        | 496                               | 497   | 496                            | 0.30                           | 322                                 | 2                       | 324    | 325                |
| All coating types pooled                  | 18,260                                    | 57.0                        | 339                               | 347   | 355                            | 0.66                           | 25,737                              | 444                     | 26,181 | 27,042             |

(1) Sales weighted average grams of volatile organic compounds (VOC) per liter of material.

(2) Sales weighted average grams of volatile organic compounds (VOC) in material plus solvents at maximum thinning per liter of material plus solvent.

(3) Sales weighted average grams of volatile organic compounds (VOC) per liter of material plus thinning solvent less water less exempt compounds.

(4) "Other specialty coatings" include bond breakers, clear fire retardant coatings, magnesite cement coatings, multi-color coatings, opaque wood preservatives, clear shellacs, and swimming pool repair coatings.

(5) Products not classified according to any of the ARB specified categories.